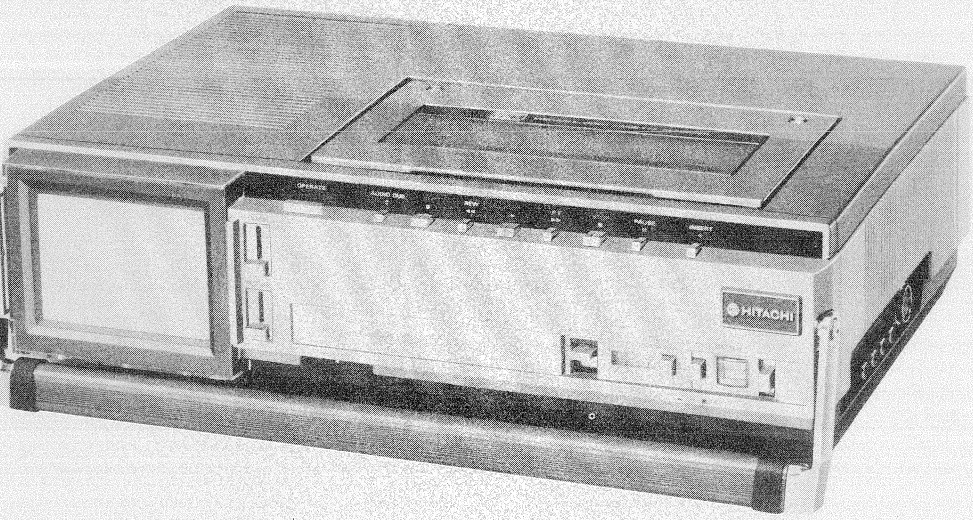
HITACHI SERVICE MANUAL

TK

No. 1844E

VT-680ME

Technical Data



VHS
**THIS VIDEO DECK IS A VHS TYPE VIDEO RECORDER.
FOR PROPER OPERATION, ONLY VHS TYPE CASSETTES MUST BE USED.**

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

PORTABLE VIDEO DECK

October 1982 **TOKAI WORKS**

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SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makes.
   Critical parts are marked with ⚠ in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS

Format:	VHS PAL Standard
Cassette:	VHS Type
Recording:	Rotary Two Head Helical Scan Azimuth Recording
Picture Tube:	5-inch diameter fine-pitch flat face type, 55° deflection
Speaker:	7 cm, 16 ohm
Tape Speed:	23.39 mm/sec.
Tape Width:	12.7 mm
Video:	PAL colour (system B & G)
Recording Time:	240 min. (with Hitachi E-240 cassette)
RF Output:	UHF channels 37 (30 – 39 adjustable)
* Video Input:	0.5–2V p-p 75 ohm Unbalanced
* Video Output:	1V p-p 75 ohm Unbalanced
* S/N Ratio (Video):	43 dB
* S/N Ratio (Audio):	43 dB
* Horizontal Resolution:	Colour 240 lines
* Mic Input:	–69 dBs 1 Kohm
* Audio Input:	–20 dBs 50 Kohm
* Audio Output:	–6 dBs 500 ohm
* Audio Frequency Range:	70 Hz to 12 kHz
Speaker Output:	0.5W (max.)
Power:	DC 12V
Power Consumption:	18W Nominal (recording with DC 12V power supply)
Cabinet Size:	400 mm(W) x 108 mm(H) x 257 mm(D)
Weight:	7.2 kg (including AC adaptor provided)
Accessories Included:	1 – Aerial cable 1 – Cassette 1 – Earphone 1 – AC adaptor 1 – AC adaptor cover 1 – AC power cord for degaussing

Marks * are the values measured at the input/output sockets.

Design and specifications are subject to change without notice.

KEY TO ILLUSTRATIONS

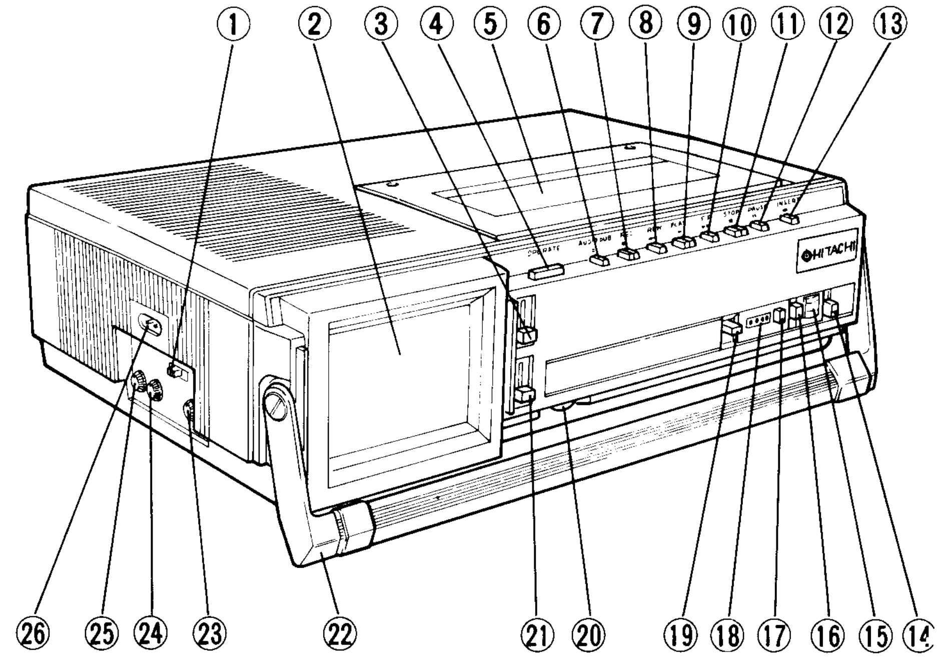


Fig. 1

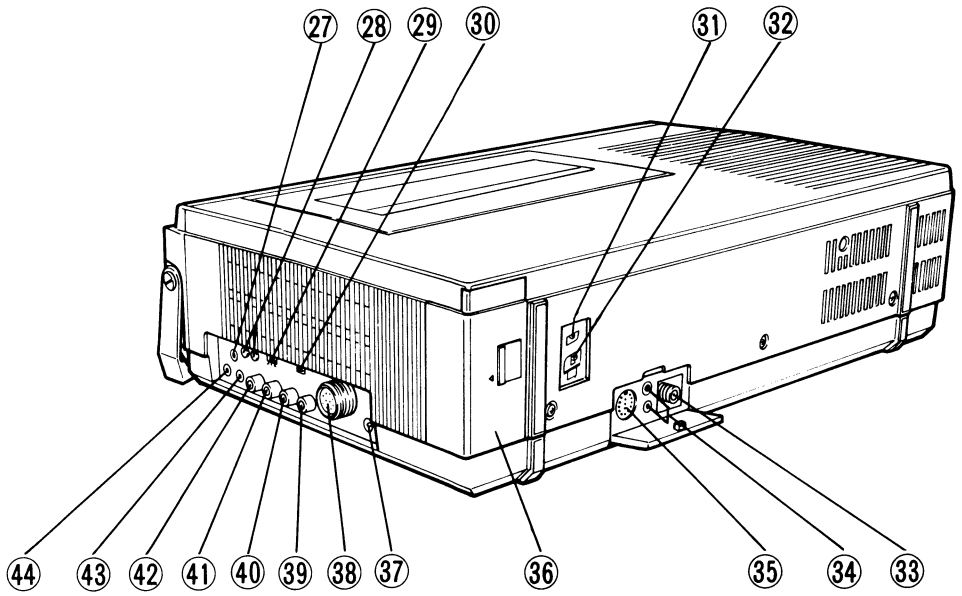


Fig. 2

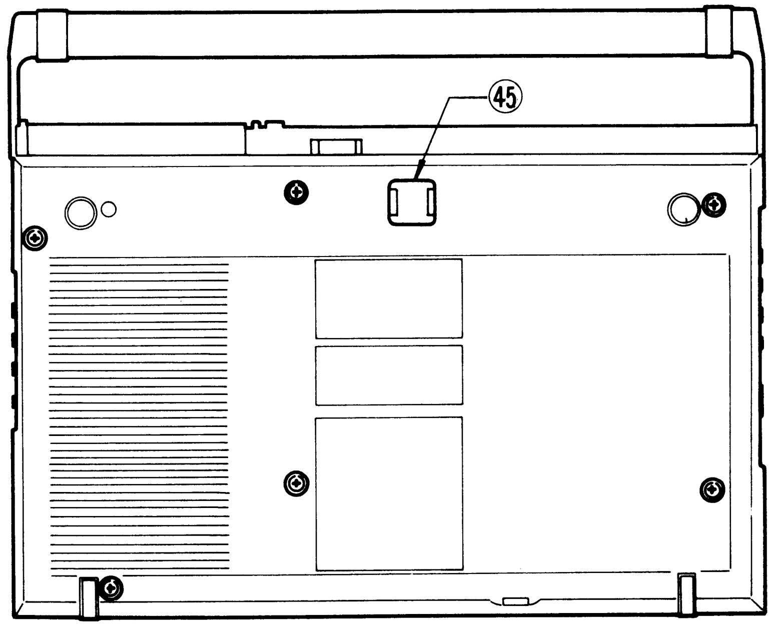


Fig. 3

① **CAMERA/MONITOR SWITCH**
This switch sets the power supplied to the camera or 5″ colour monitor ON and OFF to minimize power consumption of the battery pack.
Refer to the item, "MONITOR SYSTEM" on page 11 for details.

② **5″ COLOUR MONITOR**

③ **VOLUME CONTROL**

④ **OPERATE SWITCH**

⑤ **CASSETTE HOLDER**

⑥ **AUDIO DUB BUTTON (⇕)**
Press "PLAY" and "AUDIO DUB" buttons at the same time to audio dub.

⑦ **RECORD BUTTON (●)**
Press both "PLAY" and "REC" buttons at the same time to start recording.

⑧ **REWIND BUTTON (◀◀)**
Press to start rewind.

⑨ **PLAY BUTTON (▶)**
Press to start play.

⑩ **FAST FORWARD BUTTON (▶▶)**
Press to activate fast forward.

⑪ **STOP BUTTON (■)**
Press to stop tape. The Stop button must be pressed between record and any other operation. The Stop button must be pressed before "EJECT".

⑫ **PAUSE BUTTON (❚❚)**
Press to pause during recording and playback. Press again to release.

⑬ **INSERT BUTTON (◀❚▶)**
This button is used when recording the desired scene or title on the recorded tape.

⑭ **SOUND ON SOUND/DATE IN SWITCH**
This switch is used for recording new sound on the recorded tape or inputting the recording date.

⑮ **BATTERY METER**
This meter shows the capacity of the battery pack when the battery pack VT-BP60E is used. The section coloured green shows that the battery capacity is sufficient and the section coloured red shows insufficient capacity. When the pointer of the meter is on red, charge the battery or replace it with a sufficiently charged battery pack.

⑯ **MEMORY COUNTER SWITCH**
When pushed in MEMORY will stop at $\boxed{9999}$.

⑰ **COUNTER RESET BUTTON**
To reset counter to $\boxed{0000}$.

⑱ **TAPE COUNTER**
Shows the tape position.

⑲ **EJECT LEVER (⏏)**
Press to insert or remove cassette. The Stop button must be pressed before "EJECT".

⑳ **TRACKING CONTROL KNOB**
To minimize noise in playback.

㉑ **PICTURE CONTROL**
This control adjusts the monitor TV picture so it is easy to see.
The picture gets brighter, contrast, greater and colour, more dense as this control is set to a higher position.

㉒ **HANDLE**

㉓ **BRIGHTNESS CONTROL**

㉔ **COLOUR CONTROL**

㉕ **V. HOLD CONTROL**

㉖ **AC SOCKET FOR DEGAUSSING**
Connect the provided AC power cord into this to degauss the 5″ colour monitor screen.

㉗ **TV CONTROL**

㉘ **DATE IN BUTTONS**
These buttons are used for recording a date on the tape.

㉙ **VIDEO MODE SWITCH**

AUTO:	Circuits are automatically switched to colour or black/white mode. This positon is sufficient for most purposes.
COLOUR 1:	When recording PAL signal in the area very far from broadcasting station, recorded picture may lose colour. In that case set to this position in recording and playback.
COLOUR 2:	When recording SECAM (system B&G) signal, set to this position in recording and playback.

㉚ **CAMERA SELECT SWITCH**
Set this switch to "ON" when using a camera which is provided with the recording check function, and to "OFF" when using a camera which is not provided with this function.

㉛ **RF CONVERTER OUTPUT**
Set to vacant channel (channel 30–39) in your area.

㉜ **TEST ON/OFF SWITCH**
Turn this switch ON and check that the video channel of your TV set is correct.
After setting, set this switch to OFF.

㉝ **RF OUT SOCKET**
RF connector lead from VIDEO TUNER or AC ADAPTOR/CHARGER connects VTR and VIDEO TUNER or AC ADAPTOR/CHARGER. When VTR is not connected to VIDEO TUNER or AC ADAPTOR/CHARGER, the aerial cable connects VTR and TV monitor for playback.

㉞ **REMOTE CONTROL SOCKET**
Remote control lead from VIDEO TUNER or Remote Control unit plugs in here.

㉟ **TUNER/ADAPTOR SOCKET**
VTR connector lead from VIDEO TUNER or AC ADAPTOR/CHARGER plugs in here.

㊱ **BATTERY DOOR**
Rechargeable battery is located behind this door.

㊲ **EXTERNAL BATTERY SOCKET**
Car battery cord plugs in here to connect VTR to car cigarette lighter socket or to a spare rechargeable battery.

㊳ **CAMERA INPUT SOCKET**
Camera is connected here.
Automatically overrides any other input video signal.

㊴ **VIDEO OUT**
Permits video connection of your unit to a monitor or another VTR.

㊵ **VIDEO IN**
Receives video signal from a video camera or another VTR.

㊶ **AUDIO OUT**
Permits audio connection of your unit to a monitor or another VTR.

㊷ **AUDIO IN**
Receives audio signals from a camera, external sound equipment, or from another VTR.

㊸ **EARPHONE SOCKET**
Connect earphone.

㊹ **MICROPHONE SOCKET**
For microphone.

㊺ **Vertical drive pulse adjustment hole**

Picture rattling adjustment during trick play and search mode

With the samll lid in the bottom cover removed, the adjustment hole is seen. Picture rattling during trick play and the search mode can be controlled by adjusting through this hole using a mini-screwdriver according to the adjustment procedure (Vertical drive pulse adjustment procedure).
Adjust the SP side when rattling occurs in the SP mode, and adjust the EP side when it occurs in the EP mode.

MONITOR/CAMERA OPERATION LIST

1. When built-in battery or tuner is used

○ : operable × : Not operable

Equipment connected	Power supply used	Mode	Monitor select switch position					
			Auto		Monitor OFF		Camera OFF	
			Monitor operation	Camera operation	Monitor operation	Camera operation	Monitor operation	Camera operation
When no equipment is connected (single VT-680ME unit)	Built-in battery	STOP F. FWD REW	○		×		○	
		REC	○		×		○	
		PLAY	○		×		○	
When connected to tuner	Tuner	STOP F. FWD REW	○		×		○	
		REC	○		×		○	
		PLAY	○		×		○	
When connected to camera	Built-in battery	STOP F. FWD REW	○	○	×	○	○ Raster only	×
		REC (Stand-by)	○ (×)	○ (×)	×	○ (×)	○ Raster only	×
		PLAY (Stand-by)	○	○ (×)	×	○ (×)	○	×
When connected to tuner/camera	Tuner	STOP F. FWD REW	×	○	×	○	×	×
		REC (Stand-by)	× (×)	○ (×)	×	○ (×)	×	×
		PLAY (Stand-by)	× (○)	○ (×)	×	○ (×)	○	×

2. When additional external battery is used

○ : operable × : Not operable

Equipment connected	Power supply used	Mode	Monitor select switch position					
			Auto		Monitor OFF		Camera OFF	
			Monitor operation	Camera operation	Monitor operation	Camera operation	Monitor operation	Camera operation
When no equipment is connected (single VT-680ME unit)	Built-in battery, External battery	STOP F. FWD REW	○		×		○	
		REC	○		×		○	
		PLAY	○		×		○	
When connected to tuner	Tuner, External battery	STOP F. FWD REW	○		×		○	
		REC	○		×		○	
		PLAY	○		×		○	
When connected to camera	Built-in battery, External battery	STOP F. FWD REW	○	○	×	○	○ Raster only	×
		REC (Stand-by)	○ (×)	○ (×)	×	○ (×)	○ Raster only	×
		PLAY (Stand-by)	○ (○)	○ (×)	×	○ (×)	○	×
When conected to tuner/camera	Tuner, External battery	STOP F. FWD REW	○	○	×	○	○ Raster only	×
		REC (Stand-by)	○ (○)	○ (×)	×	○ (×)	○ Raster only	×
		PLAY (Stand-by)	○ (○)	○ (×)	×	○ (×)	○	×

MONITOR SELECTOR (S101) OPERATION

- **When S101 is set to CAMERA-OFF**

  When S101 is set to CAMERA-OFF, the relay power of RL001 is cut and the relay does not work, so the circuit becomes unable to supply the +B power to the camera.

  When the unit is set to the play mode at this time with the tuner or the AC adaptor used as a power supply, IC001 pins ③ and ⑧ are set to (Lo), and (Hi) is applied to IC002 pin ⑤, so (Lo) is obtained at IC002 pin ④ and its signal is sent to IC001 pin ⑨, so IC001 pins ⑩ and ⑫ are set to (Hi).

  +B voltage is applied to IC002 pin ① via RL001 and D001 at that time, so IC002 pin ① is set to (Hi) and at the same time, IC002 pin ② is set to (Hi) because the unit is in the play mode, so (Lo) is obtained at IC002 pin ③. IC001 pin ⑬ is set to (Lo), so (Hi) is obtained at IC001 pin ⑪ to set Q004 to ON to operate RL003 to set it to the NO side and the +B power is supplied to the colour monitor via RL002. When the camera is connected in this state, IC002 pin ⑬ continues to remain at (Lo) because IC002 pin ③ is set to (Lo), so the +B power is supplied to the colour monitor as it is.

  Next, when an external battery is connected as the power supply, Q002 is set to ON. Q003 to which 9V is supplied is ON at this times, so RL002 operates and is set to the NO side, so the +B power of the tuner or adaptor which has been supplied to the colour monitor via RL003 is cut off and simultaneously the external battery power is supplied to the colour monitor as the +B power supply.

- **When S101 is set to MONITOR-OFF**

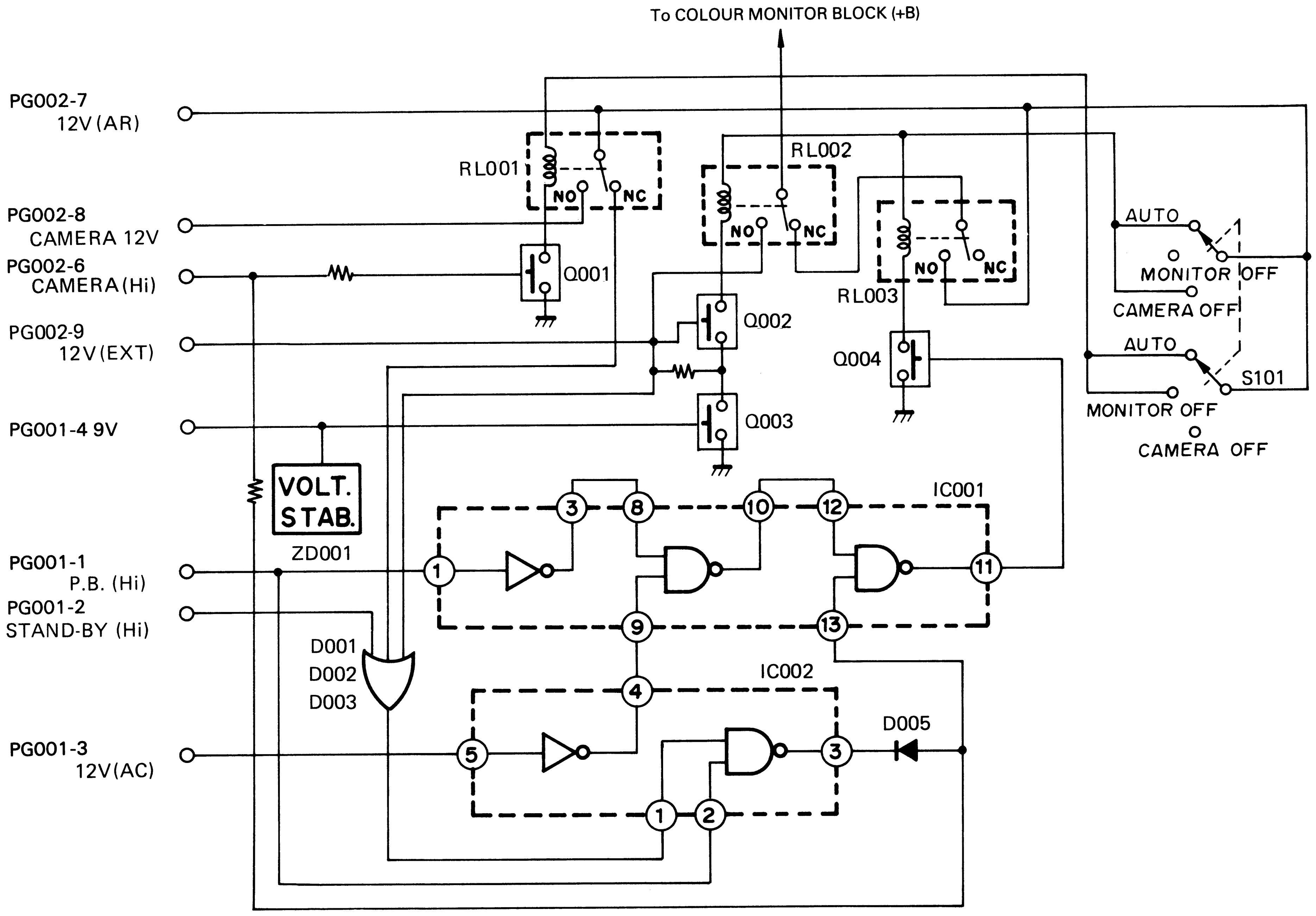
  When S101 is set to the MONITOR-OFF from CAMERA-OFF, the power supply for RL002 and RL003 is cut off and the relays do not work, so the circuit becomes unable to supply the +B power supply to the colour monitor.

  When the camera is connected in this state, Q001 is set to ON, RL001 is operated and set to the NO side, so the +B power is supplied to the camera.

- **When S001 is set to AUTO**

  When S101 is set to AUTO, the relay power is supplied to RL001, 002, 003 and all the relays become operable. This state is basically the same circuit operation as in the CAMERA-OFF and MONITOR-OFF modes previously described. When the camera is connected in this state, Q001 is set to ON, RL001 operates and is set to the NO side, so IC002 pin ① is set to (Lo) and (Hi) is sent to IC 002 pin ③. Then IC001 pin ⑬ is set to (Hi) and (L is obtained at IC001 pin ⑪, so RL003 becomes non-operable and set to the NC side. As a result, the +B power is not supplied to the colour monitor.

  When the external battery is connected or (Hi) is applied to IC002 pin ① with the camera set to the stand-by mode, the +B power can be supplied to the colour monitor.


To COLOUR MONITOR BLOCK (+B)
PG002-7
12V (AR)
PG002-8
CAMERA 12V
PG002-6
CAMERA (Hi)
PG002-9
12V (EXT)
PG001-4 9V
PG001-1
P.B. (Hi)
PG001-2
STAND-BY (Hi)
PG001-3
12V (AC)
RL001
NO
NC
RL002
NO
NC
RL003
NO
NC
Q001
Q002
Q003
Q004
VOLT.
STAB.
ZD001
D001
D002
D003
IC001
IC002
D005
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8
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11
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4
5
3
1
2
AUTO
MONITOR OFF
CAMERA OFF
AUTO
S101
MONITOR OFF
CAMERA OFF

Fig. 4

WIRING LAY-OUT DIAGRAM

There are many sections such as the high voltage section, heating section and insulation section, etc. to which care should be paid, so perform repairs while with great care. Be sure to replace parts with the specified ones when repairing, and arrange wiring as before. (Refer to Fig. 5.)

Caution:
When parts other than the specified ones are used or wiring is not done as before, it may cause accidents such as electric shocks or fire, etc. as well as degrading of performance.

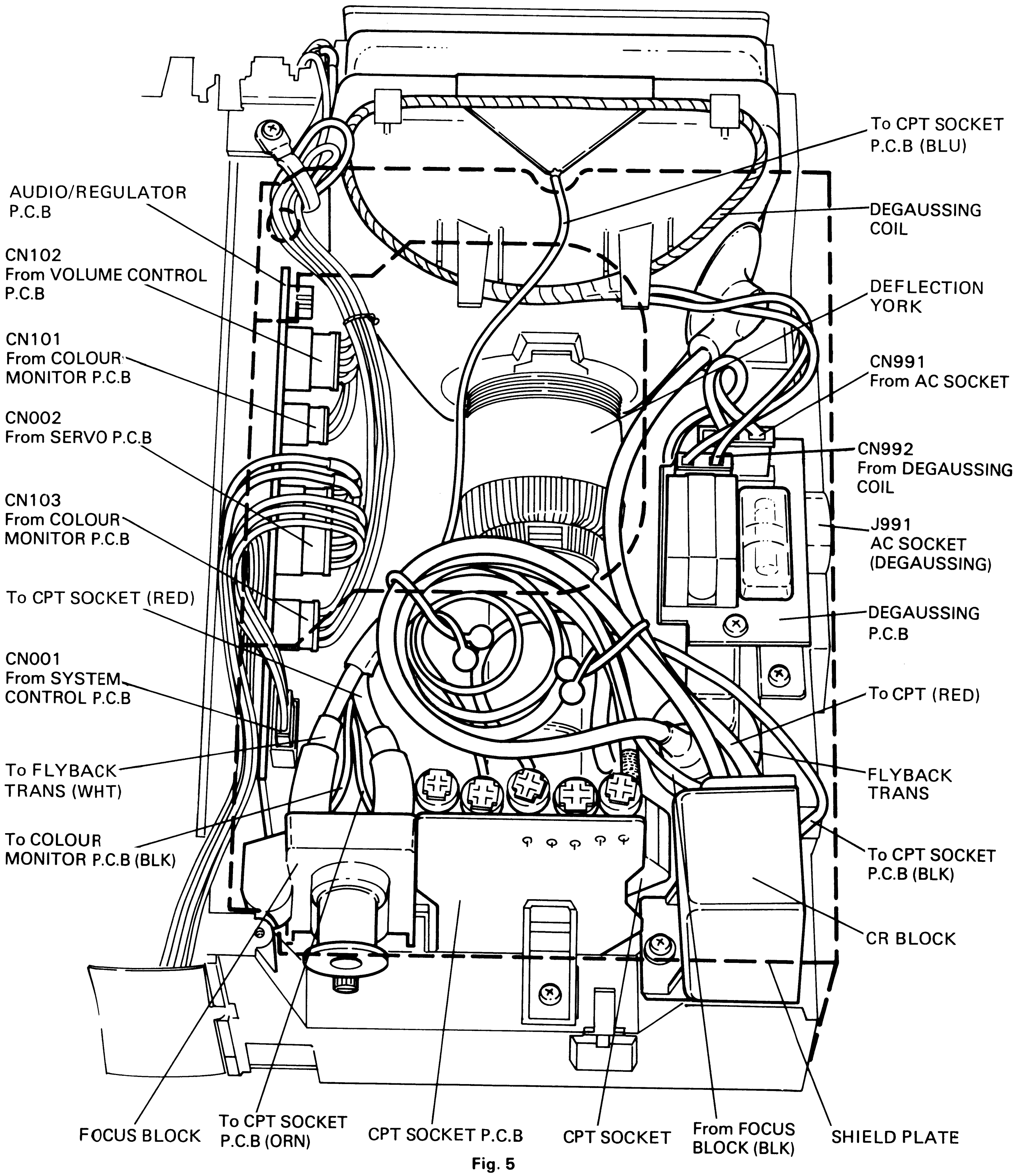
AUDIO/REGULATOR P.C.B
CN102 From VOLUME CONTROL P.C.B
CN101 From COLOUR MONITOR P.C.B
CN002 From SERVO P.C.B
CN103 From COLOUR MONITOR P.C.B
To CPT SOCKET (RED)
CN001 From SYSTEM CONTROL P.C.B
To FLYBACK TRANS (WHT)
To COLOUR MONITOR P.C.B (BLK)
To CPT SOCKET P.C.B (BLU)
DEGAUSSING COIL
DEFLECTION YORK
CN991 From AC SOCKET
CN992 From DEGAUSSING COIL
J991 AC SOCKET (DEGAUSSING)
DEGAUSSING P.C.B
To CPT (RED)
FLYBACK TRANS
To CPT SOCKET P.C.B (BLK)
CR BLOCK
FOCUS BLOCK
To CPT SOCKET P.C.B (ORN)
CPT SOCKET P.C.B
CPT SOCKET
From FOCUS BLOCK (BLK)
SHIELD PLATE

Fig. 5

DISMANTLING

1. Removing the case

1-1. Top cover (Fig. 6)

1) Remove 3 screws.
2) Open the cassette holder and pull back the top case while lifting its back.

Note: Be careful not to disconnect wiring to the speaker when removing the top case.

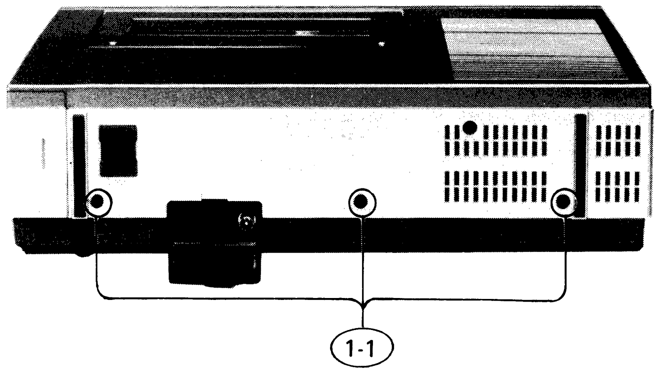

Fig. 6

1-2. Bottom cover (Fig. 7)

1) Remove 6 screws.

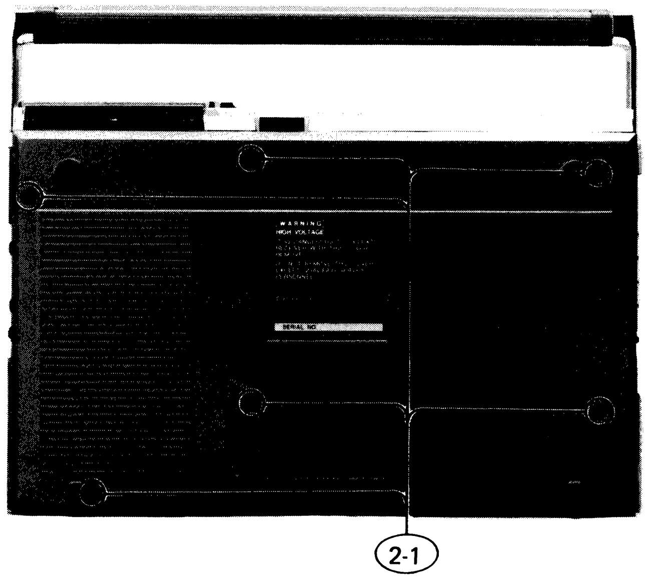

Fig. 7

1-3. Front cover (Figs. 8, 9, 10)

1) Remove 2 controls. (Volume control, picture control)
2) Remove 4 screws.
3) Pull 2 stoppers upward to remove them.
4) Lower the top of the front cover toward you.

Note: Assemble the front cover while checking that the power switch button is out.

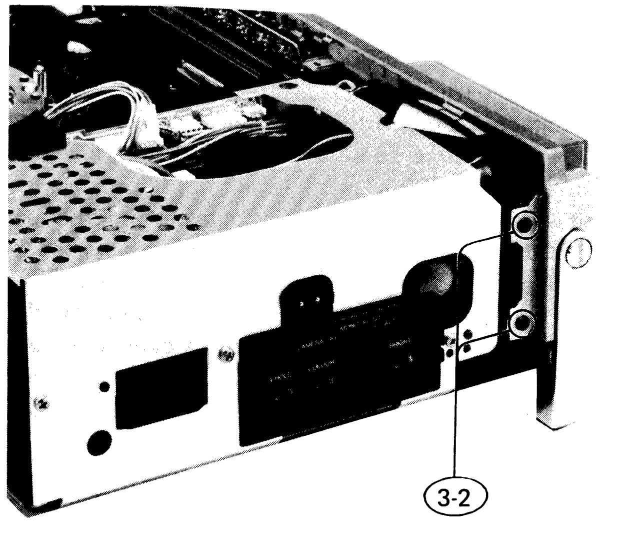

Fig. 8

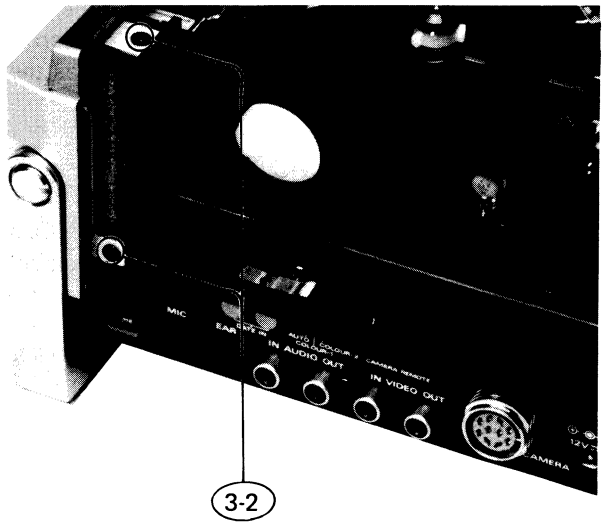

Fig. 9

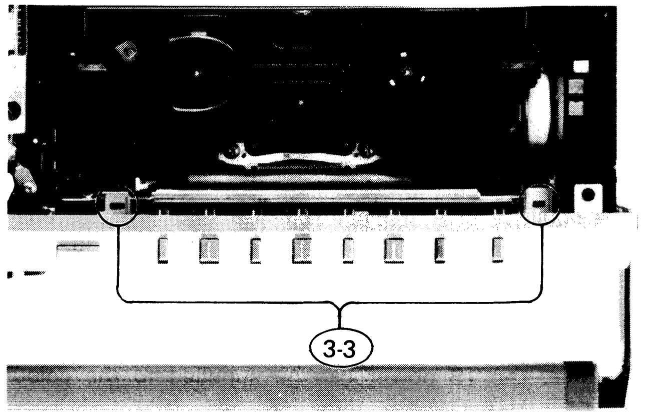

Fig. 10

1-4. Colour monitor (Figs. 11, 12)

1) Remove 2 screws.
2) Lift the CPT surface side a little to release the engaged section.
3) Open it in the direction of the arrow to remove it.

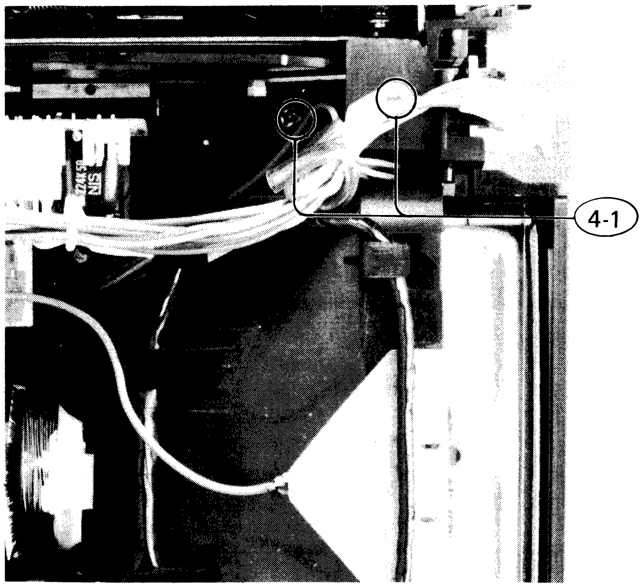

Fig. 11

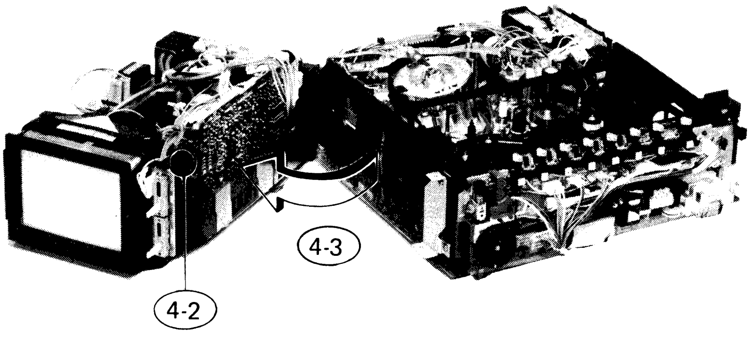

Fig. 12

2. Main mechanical parts locations

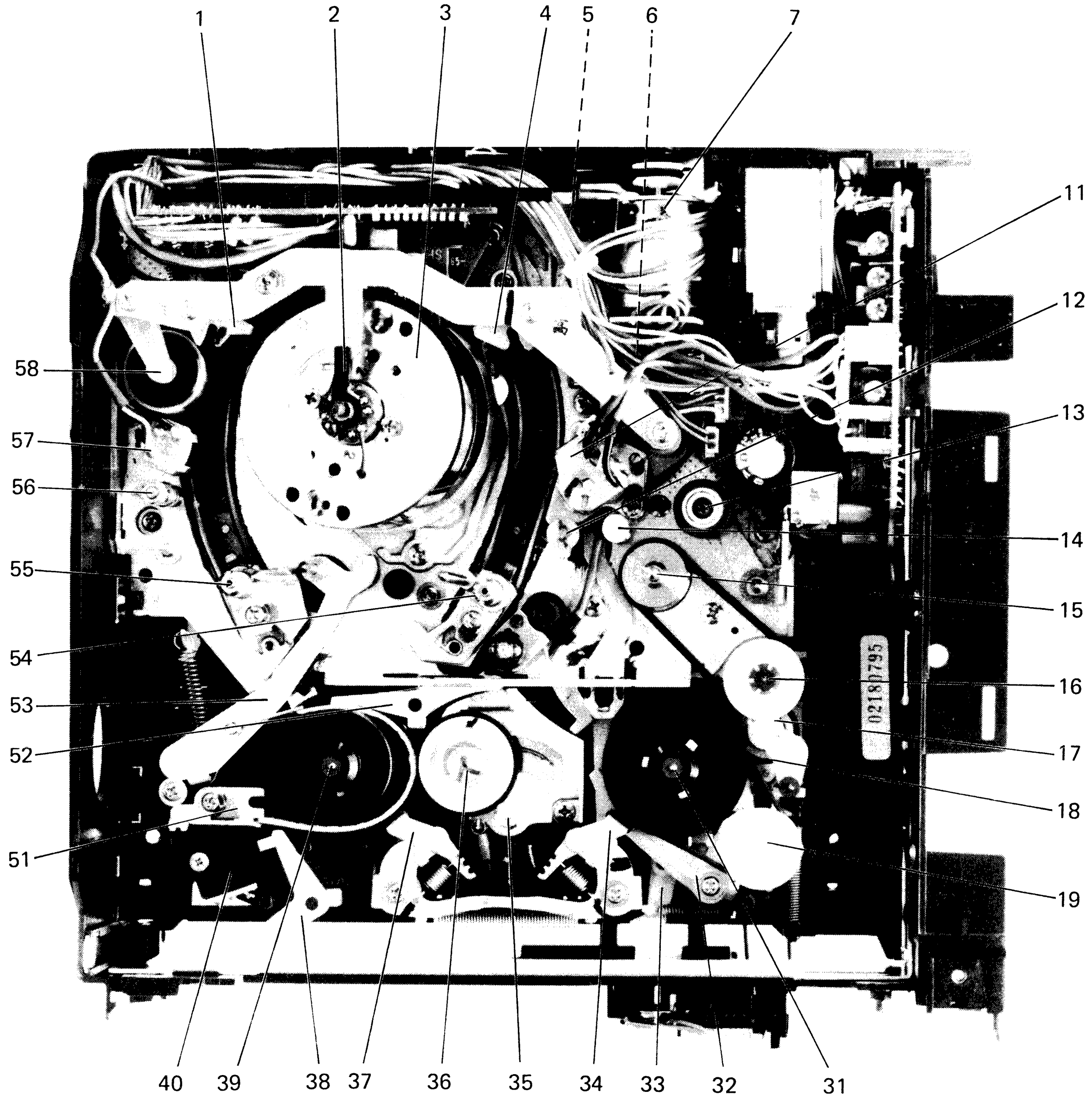
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Fig. 13 Top view

1. CATCHER (SUPPLY)
2. CYLINDER MOTOR GND PIECE
3. CYLINDER (VIDEO HEAD)
4. CATCHER (TAKE - UP)
5. BRAKE PULLEY
6. BRAKE OPERATION MECHANISM
7. LOADING MOTOR

11. AC HEAD (AUDIO/CONTROL HEAD)
12. X VALUE ADJUSTMENT SCREW
13. PRESSURE ROLLER
14. GUIDE POLE (TAKE - UP)
15. CAPSTAN
16. TAKE - UP PULLEY
17. PLAY IDLER
18. TAKE - UP BRAKE
19. COUNTER PULLEY

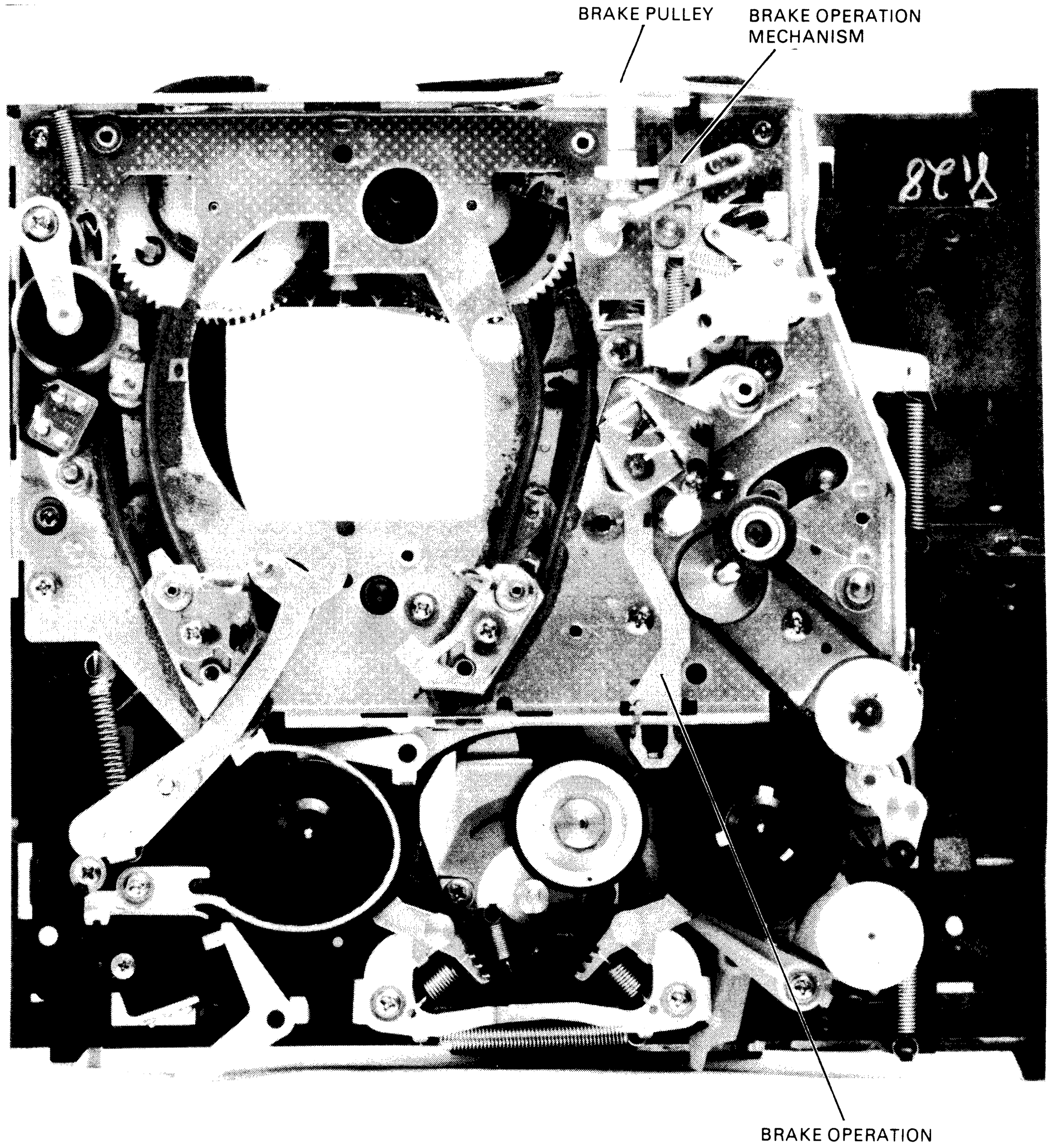

BRAKE PULLEY
BRAKE OPERATION MECHANISM
BRAKE OPERATION

Fig. 14 Top view of brake operation mechanism

31. REEL DISK (TAKE - UP)
32. FF/REW IDLER RELEASE LEVER
33. EJECT PREVENTION TAB
34. MAIN BRAKE (TAKE - UP)
35. REEL MOTOR PULLEY
36. FF/REW IDLER
37. MAIN BRAKE (SUPPLY)
38. SAFETY TAB LEVER
39. REEL DISK (SUPPLY)
40. SAFETY TAB SWITCH

51. TENSION BAND
52. SUPPLY BRAKE
53. TENSION ARM
54. GUIDE ROLLER BASE (TAKE - UP)
55. GUIDE ROLLER BASE (SUPPLY)
56. GUIDE POLE (SUPPLY)
57. FE HEAD (FULL ERASE HEAD)
58. IMPEDANCE ROLLER (SUPPLY)

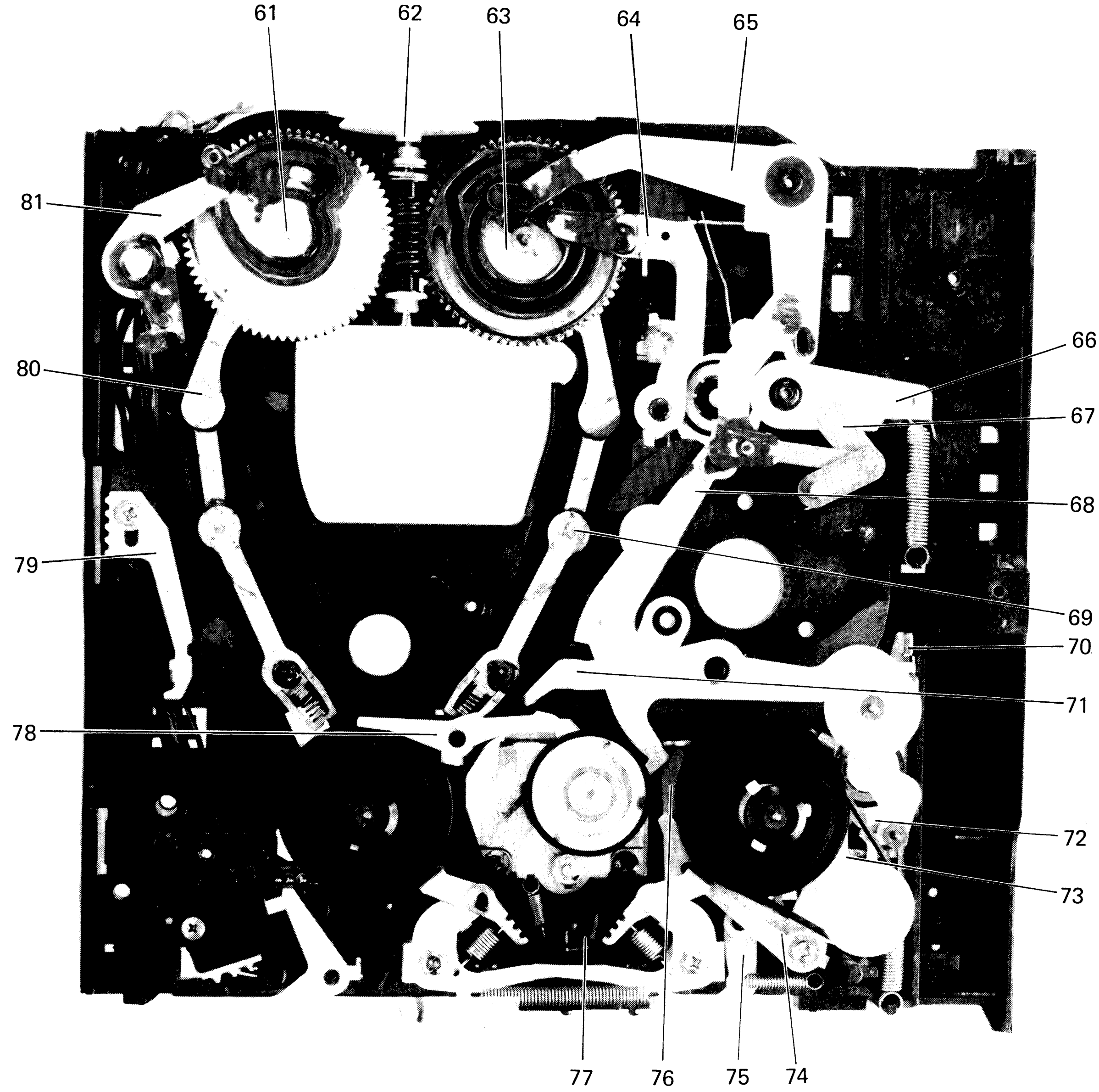


Fig. 15 Slider/lever parts location

61. LOADING GEAR (SUPPLY)
62. WORM GEAR PULLEY
63. LOADING GEAR (TAKE - UP)
64. SWITCH (STATE SENSOR) OPERATION ARM
65. DRIVE ARM A.
66. PRESSURE ROLLER COMPRESSION ARM
67. PRESSURE ROLLER DRIVE LINK
68. DRIVE ARM B.
69. THREE - CONNECTION LINK (TAKE - UP)
70. OPERATION SLIDER B.
71. SUPPLY BRAKE OPERATION ARM
72. TAKE - UP BRAKE
73. OPERATION SLIDER A
74. FF/REW IDLER RELEASE LEVER
75. EJECT PREVENTIVE TAB
76. MAIN BRAKE OPERATION SLIDER
77. MAIN BRAKE OPERATION ARM
78. SUPPLY BRAKE
79. TENSION SPRING HOLDER
80. THREE - CONNECTION LINK (SUPPLY)
81. IMPEDANCE ROLLER DRIVE ARM

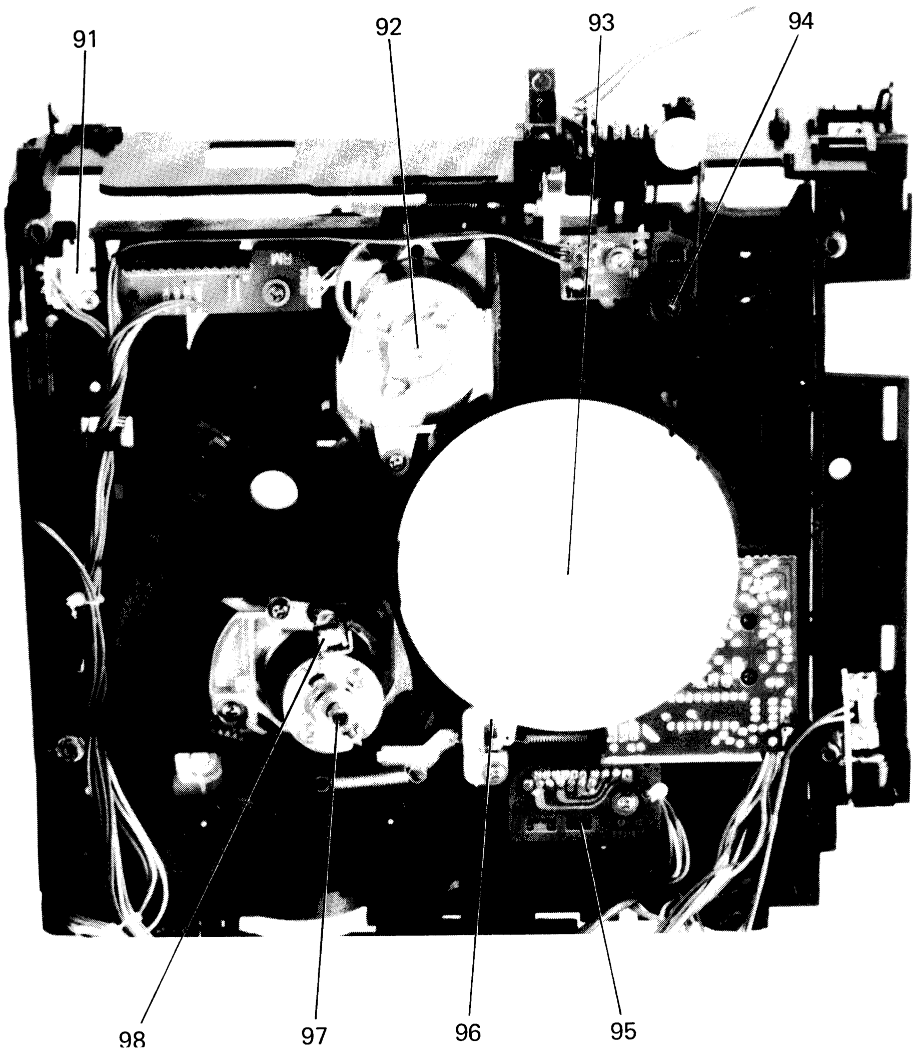


Fig. 16 Bottom view

91. CASSETTE HOLDER SWITCH
92. REEL MOTOR
93. CAPSTAN MOTOR
94. REEL SENSOR MAGNET
95. MECHANICAL STATE SENSOR SWITCH
96. SLOW BRAKE
97. CYLINDER MOTOR
98. CYLINDER TACH HEAD

3. Removing the main mechanical parts

1. Reinforcement plate
2. Cassette holder

Motors, etc.

3. Cylinder/cylinder base
4. Loading motor
5. Capstan motor
6. Reel motor

Pulleys, etc.

7. FF/REW idler
8. Impedance roller
9. Pressure roller
10. Take-up pulley
11. Play idler
12. Counter pulley
13. Reel disk
14. Slow brake

Others

15. Main brake
16. Tension arm/tension band
17. Guide roller base/Inclined guide
18. Sub. chassis
19. Loading gear
20. Frame

3-1. Reinforcement plate (Fig. 17)

1) Remove 4 screws

3-2. Cassette holder (Figs. 17, 18)

1) Lift up the cassette holder.
2) Remove the safety tab switch lever.
3) Remove 2 screws.

Pay attention to the following when assembling the cassette holder. If it is not done correctly, the cassette holder will not operate properly after assembly. Set the cassette holder up when assembling.

Notes:

1. The cassette eject arm should be on the right of the eject prevention tab when unloading is complete.
2. The synchronization plate of the cassette holder should enter between the cassette eject arm and the frame. When the eject arm at the front of the frame is pulled toward you with the servo PC Board kept open when mounting the holder, the synchronization plate easily enters between the eject arm and the frame.

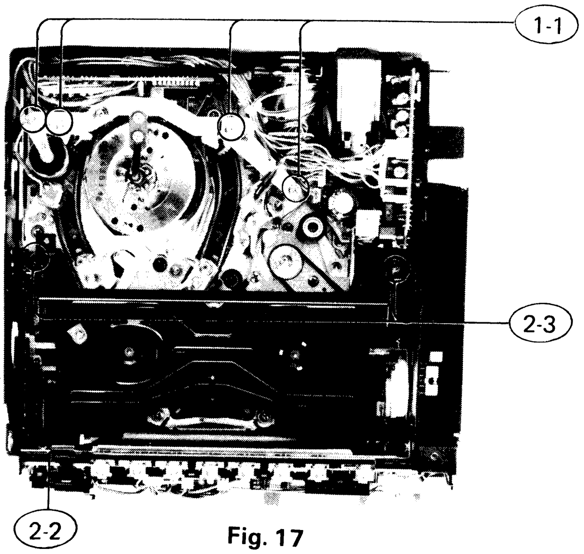


Fig. 17

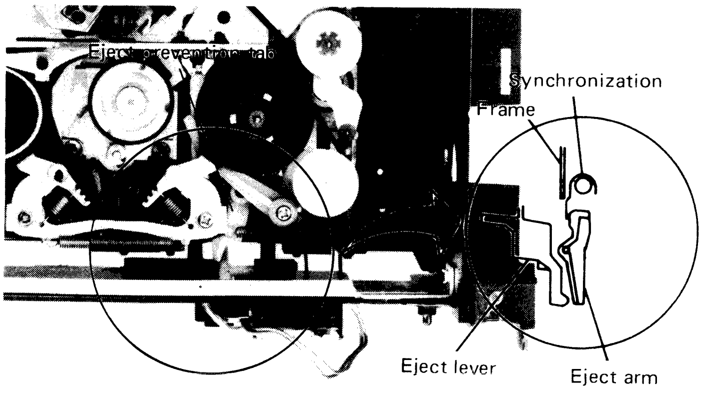


Fig. 18

3-3. Cylinder/cylinder motor (Figs. 19, 20)

1) Remove the cord clamper from the frame, and then remove the connector between the video head and Luminance/Chroma PC Board.
2) Pull out the cylinder motor driver PC Board.
3) Remove 3 screws to remove the cylinder motor together with the base.
4) Remove 3 screws to separate the base and the cylinder motor from each other.

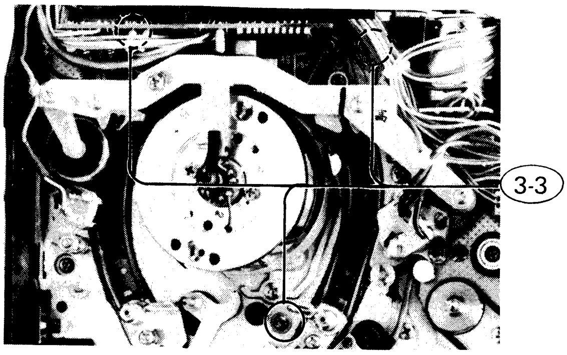


Fig. 19

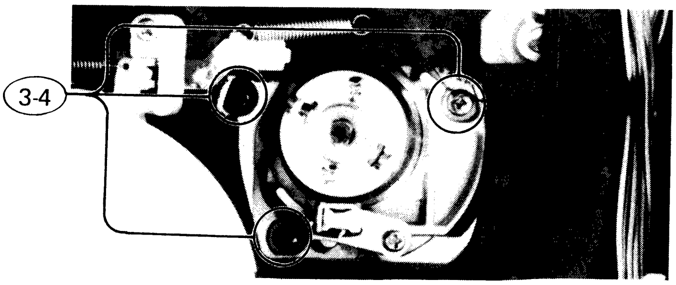


Fig. 20

3-4. Loading motor (Fig. 21)

1) Remove the connector between the loading motor and the loading motor driver PC Board.
2) Remove 1 screw.

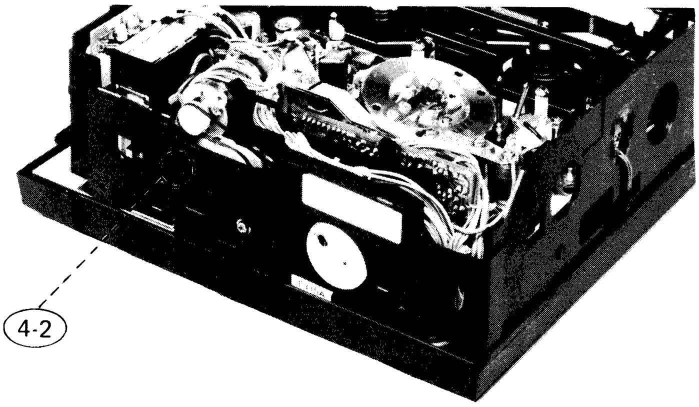


Fig. 21

3-5. Capstan motor (Fig. 22)

1) Open the servo PC Board.
2) Remove the connector between the capstan motor and the servo PC Board.
3) Remove the belt.
4) Remove 3 screws.

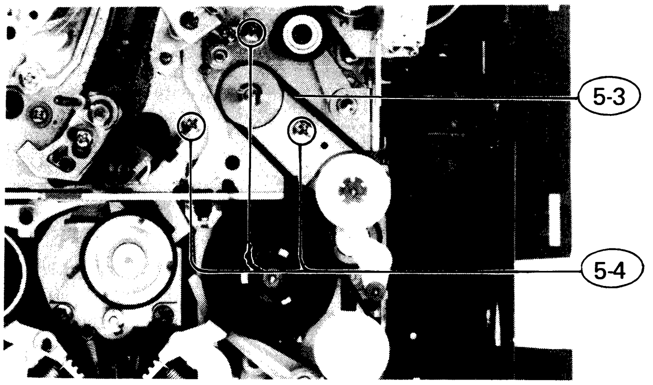


Fig. 22

3-6. Reel motor (Fig. 23)

1) Remove the connector.
2) Remove 1 screw.
3) Move the FF/REW idler so that it does not touch the chassis and the supply brake, and pull out the brake.

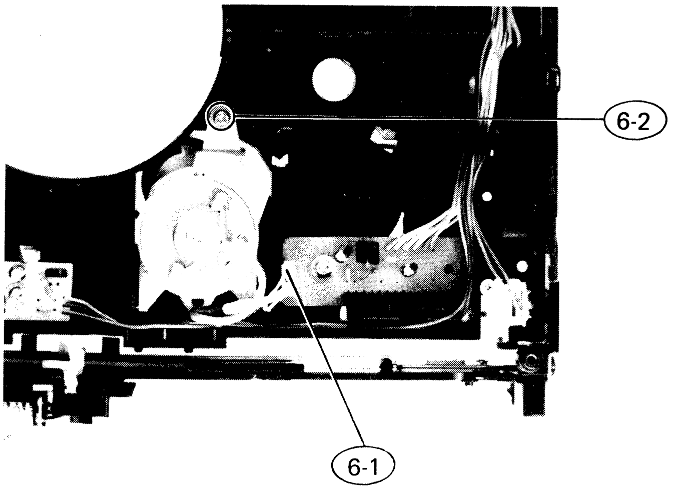


Fig. 23

3-7. FF/REW idler

1) Remove the reel motor.
2) Loosen the hexagonal screw which holds the motor shaft.

3-8. Impedance roller

1) Remove the reinforcement plate, and pull the roller out from the shaft.

Note: Make sure that the roller shaft enters the U-groove in the impedance roller operation arm during assembly.

3-9. Pressure roller

1) Remove 1 screw inside the pressure roller.

Note: Assemble the pressure roller with the section provided with the plastic inner wheel top.

3-10. Take-up pulley

1) Remove the washer from the take-up pulley shaft.
2) Remove the capstan belt and pull the pulley out of the chassis.

3-11. Play idler

1) Remove the take-up pulley.
2) Remove the washer from the play idler ass'y shaft.
3) Remove the spring between the play idler ass'y and the sub. chassis.

Note: Check that the take-up brake shaft enters the groove just before the operation slider B, and that the play idler shaft enters the front groove during assembly.

3-12. Counter pulley

1) Remove the washer attached to the reel sensor magnet shaft at the bottom of the chassis.
2) Pull out the pulley upward.

3-13. Reel disks

1) Remove the washer from the reel disk shaft.

In the case of the take-up reel disk

2) Remove the counter pulley belt and remove the disk from the shaft.

In the case of the supply reel

3) Remove the tension band.
4) Pull out the supply brake.
5) Pull out the reel disk.

3-14. Slow brake

1) Remove the capstan motor.
2) Loosen the screw which fixes the slow brake operation slider clamp plate.

3-15. Main brake

1) Remove the brake clamp screw.

3-16. Tension arm/tension band (Fig. 24)

1) Remove the spring between the sub. chassis and the tension arm.
2) Remove the tension arm clamp screw.
3) Remove the band holder fixing screw.

3-17. Guide roller base/inclined guide

Guide roller base

1) Remove the sub. chassis.
2) Remove the leaf spring clamp screw.

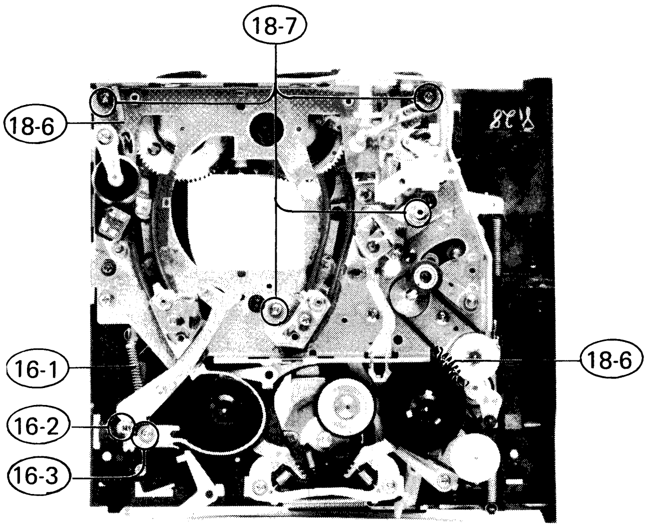
Inclined guide

1) Remove the screw at the top of the guide roller base.
2) Pull out the inclined guide together with the base taking care to prevent it from touching the guide roller.

3-18. Sub. chassis (Fig. 24)

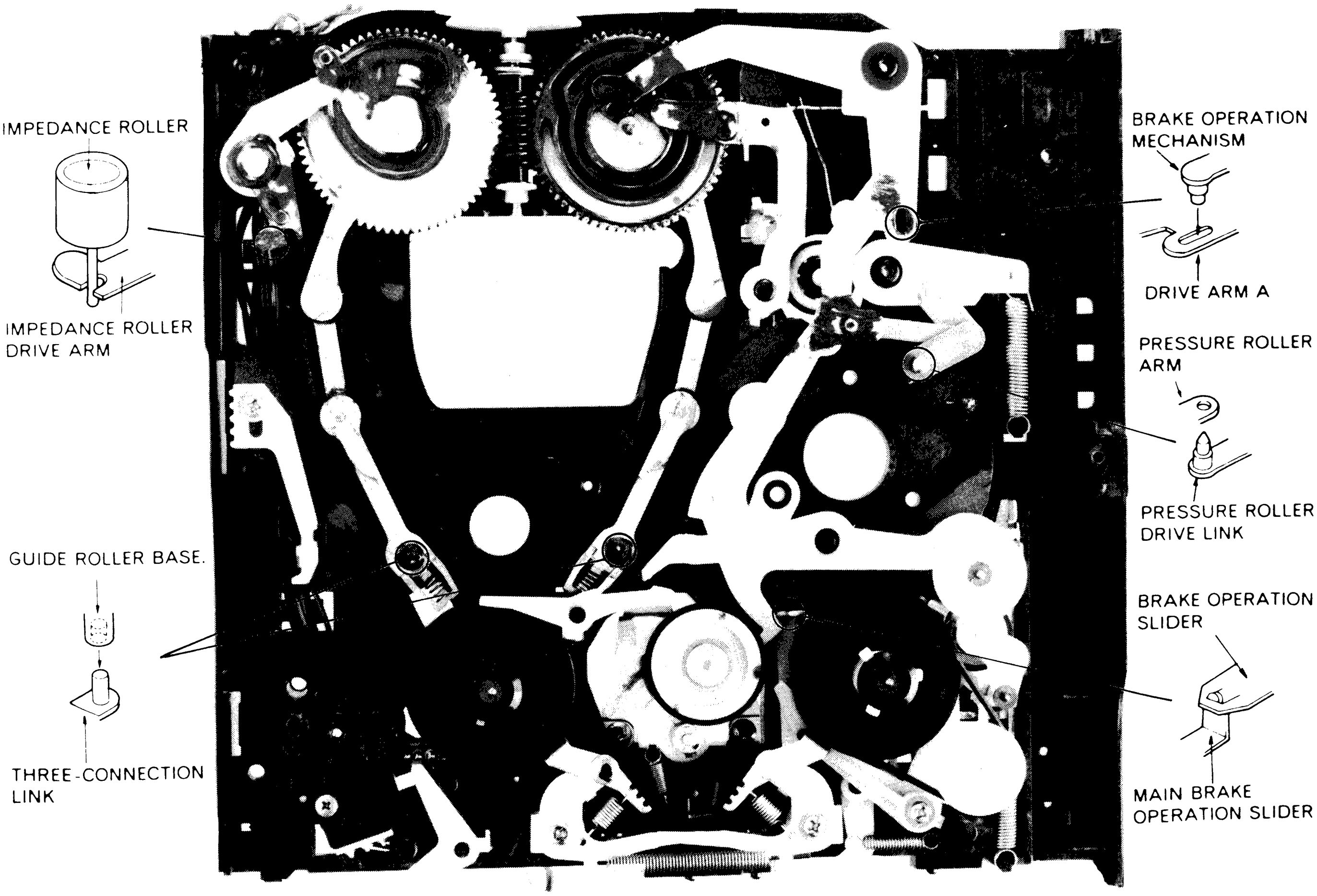
1) Remove the cassette holder.
2) Remove the loading motor.
3) Remove the cylinder base (to protect the video head)
4) Remove the capstan motor.
5) Remove the tension arm.
6) Remove 2 springs.
7) Remove 4 screws.

Note: 6 position shown in Fig. 25 engage with the parts attached to the sub-chassis; install the sub-chassis while checking this.



18-7
18-6
16-1
16-2
16-3
18-6

Fig. 24



IMPEDANCE ROLLER
IMPEDANCE ROLLER DRIVE ARM
GUIDE ROLLER BASE.
THREE-CONNECTION LINK
BRAKE OPERATION MECHANISM
DRIVE ARM A
PRESSURE ROLLER ARM
PRESSURE ROLLER DRIVE LINK
BRAKE OPERATION SLIDER
MAIN BRAKE OPERATION SLIDER

Fig. 25

3-19. Loading gear (Fig. 26)

1) Set the mechanism to the unloading complete condition.
2) Remove the sub. chassis.
3) Remove the drive arm A, switch operation arm and impedance roller operation arm.

During assembly:

1. Install the loading gear so that the triangular projections of both loading gears are symmetrical with respect to the worm gear shaft, and then turn the worm gear in the unloading direction to set the mechanism to the unloading complete condition.
2. Set all the arms to the specified positions.

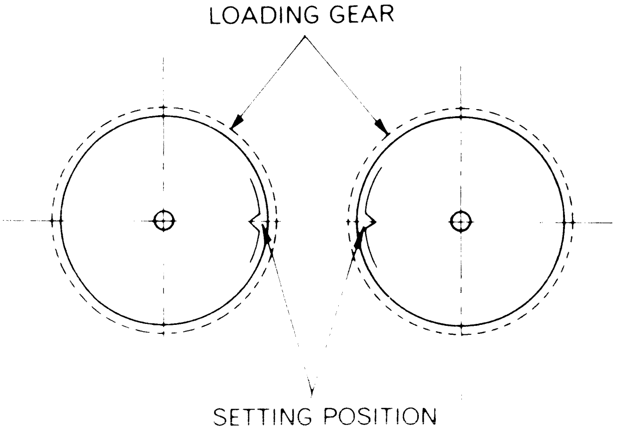


Fig. 26

3-20. Frame (Figs. 27, 28, 29)

1) Open the system control PC Board and Servo PC Board.
2) Remove the take-up end sensor from the frame
3) Remove the audio PC Board.
4) Remove the cord clamper.
5) Cut 4 belts.
6) Remove 5 connectors of the Servo PC Board.
7) Remove the internal battery jack, reel sensor, relay belt, cassette holder switch, reel motor driver PC Board and supply end sensor.
8) Remove 3 frame fixing screws to pull the frame down.

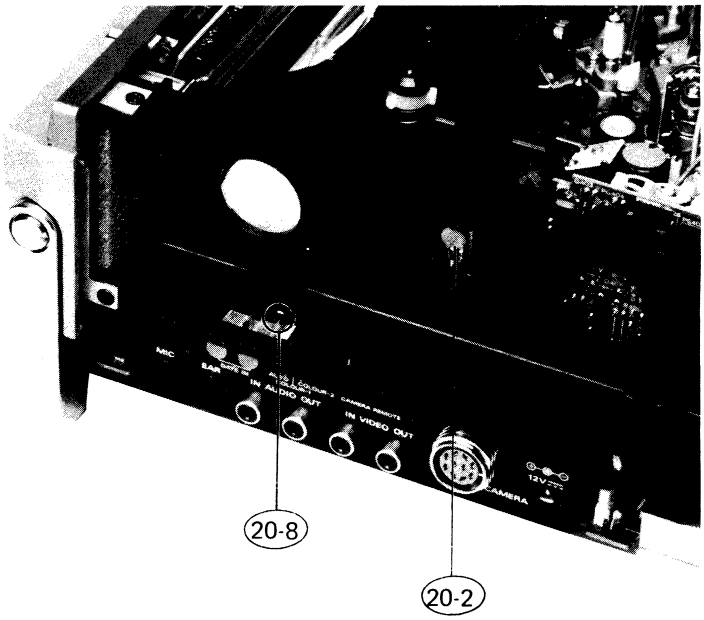


Fig. 27

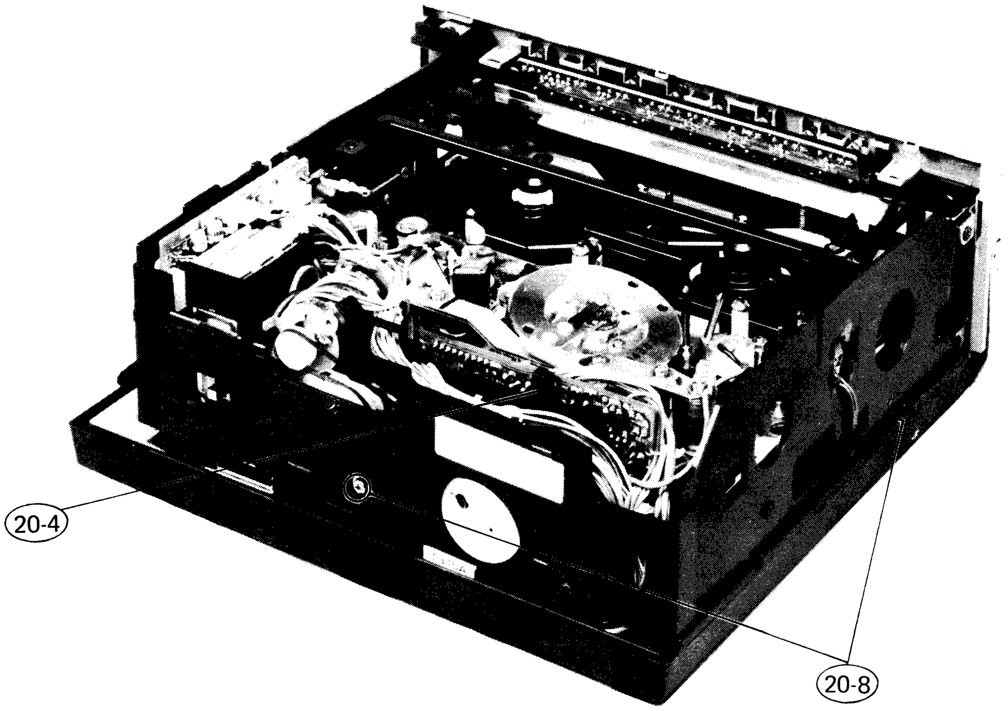


Fig. 28

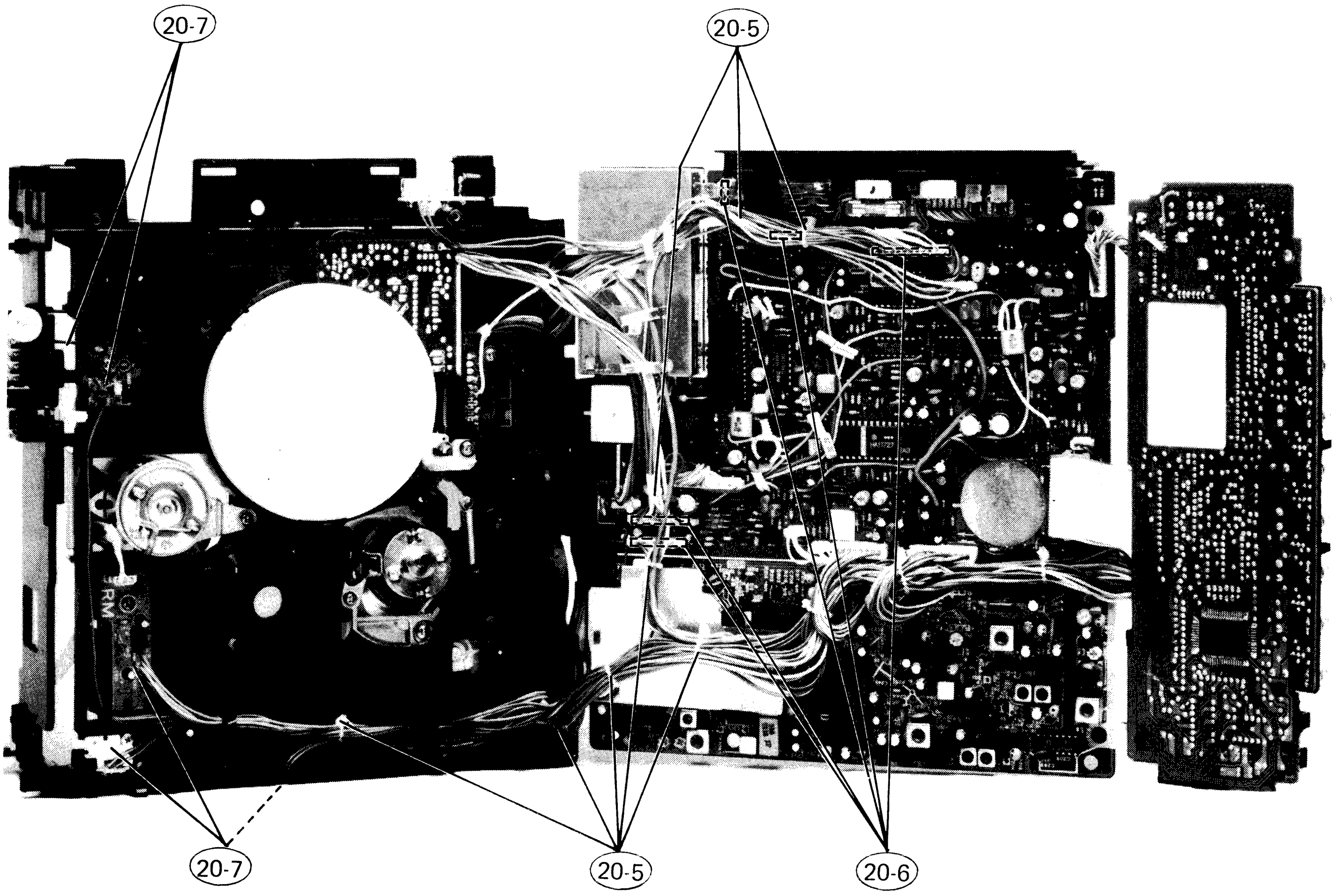
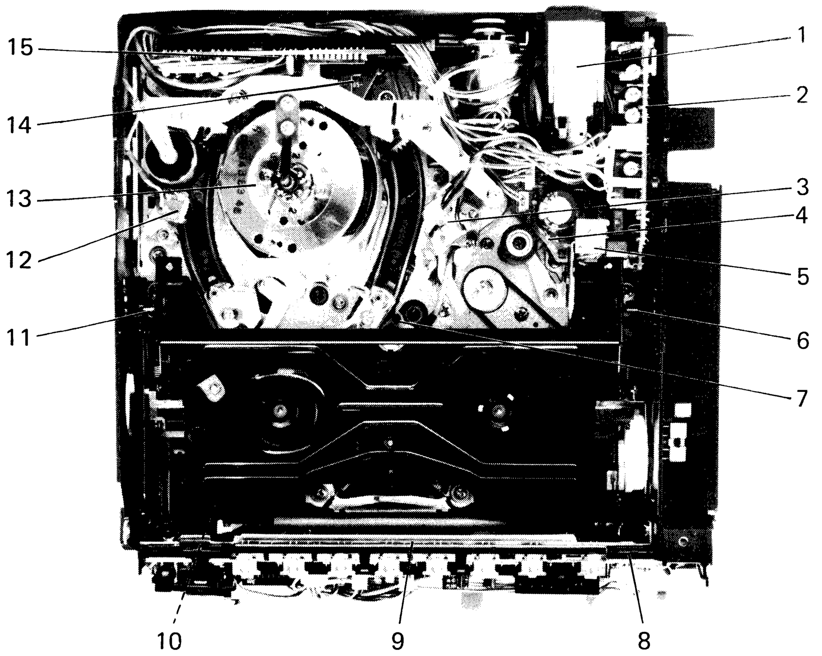

20-7
20-5
20-7
20-5
20-6
RM

Fig. 29

4. PC Board locations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1. RF converter
2. Audio
3. AC head
4. Loading motor driver
5. Dew sensor
6. End sensor (Take-up)
7. End lamp
8. System control
9. Operation switch
10. Safety tab switch
11. End sensor (Supply)
12. Full-erase head
13. Cylinder (Video head)
14. Cylinder motor
15. Cylinder motor driver

Fig. 30 Top view

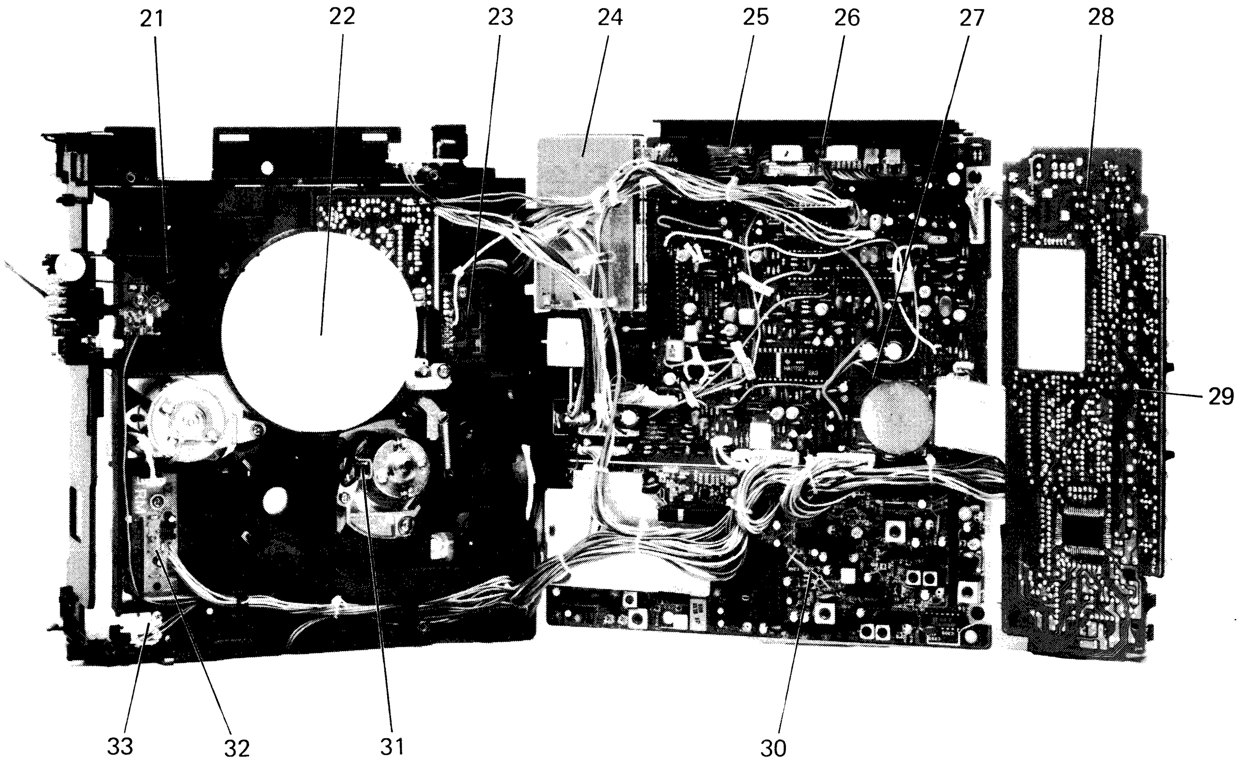
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Fig. 31 Bottom view

21. Reel sensor
22. Capstan motor
23. Mechanical state sensor switch
24. Switching regulator
25. Camera connector
26. Auto colour
27. Servo
28. System control
29. Operation switch
30. Luminance/Chroma
31. Cylinder tach head
32. Reel motor driver
33. Cassette holder switch

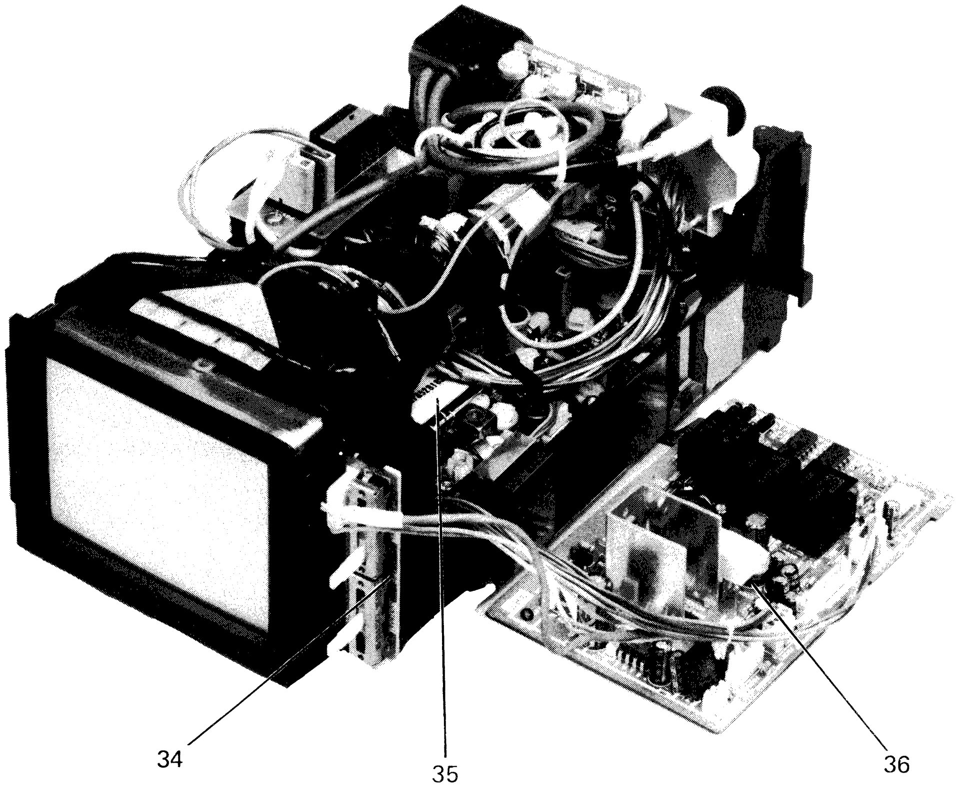
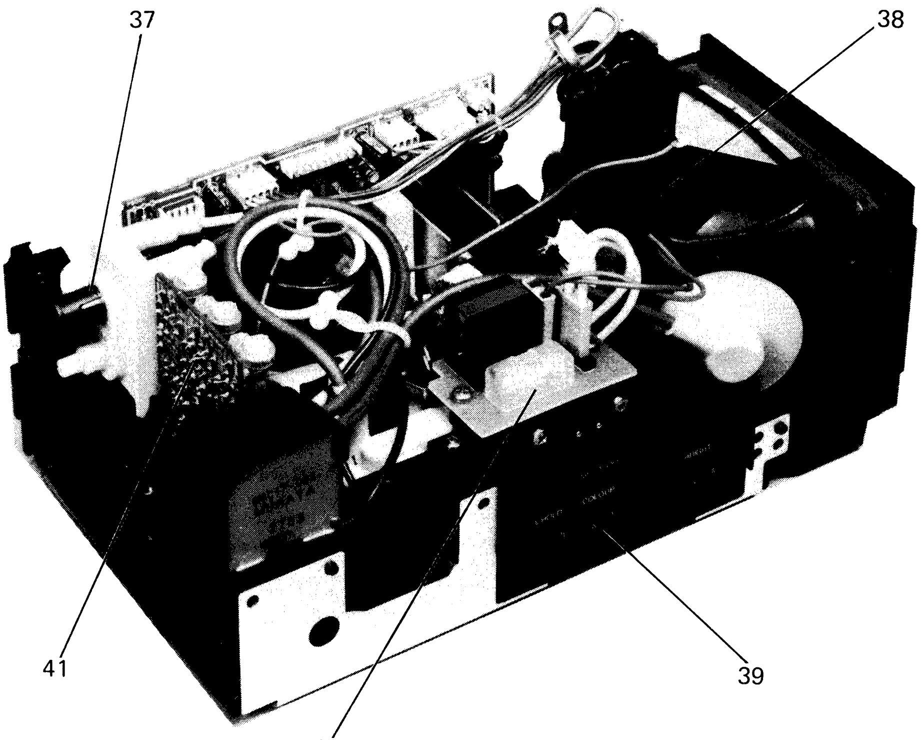


Fig. 32

34. Volume control
35. Colour monitor
36. Audio/Regulator



37. Focus block
38. 5 inch CPT
39. Monitor selector
40. Degaussing
41. CPT socket

Fig. 33

5. Removing the main electric parts and PC Boards

VIDEO DECK BLOCK

Head

1. Upper cylinder (video head)
2. FE head
3. AC head
4. Tach head

PC Board

5. System control PC Board/operation switch PC Board
6. Servo PC Board/luminance/chroma PC Boards
7. Cylinder motor driver PC Board
8. Loading motor driver PC Board
9. Reel motor driver PC Board
10. Mechanical state sensor switch PC Board
11. Reel sensor PC Board
12. Auto colour PC Board
13. Audio PC Board
14. RF converter
15. Switching regulator

COLOUR MONITOR BLOCK

PC Board

16. Volume control PC Board
17. Audio/Regulator PC Board
18. Degaussing PC Board
19. Focus block
20. 5 inch CPT
21. CPT socket PC Board
22. Color monitor PC Board
23. Monitor selector PC Board

5-1. Upper cylinder (video head) (Fig. 34)

1) Remove the cylinder motor GND piece.
2) Remove 4 leads over the cylinder.
3) Remove 2 screws.

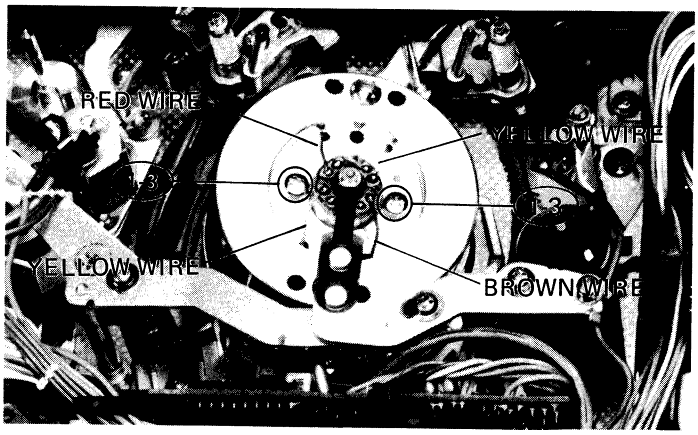


Fig. 34

5-2. FE head (Fig. 39)

1) Remove the reinforcement plate.
2) Remove 2 leads of the head.
3) Pull out the head together with the base from the chassis and remove 2 fixing screws at the bottom.

5-3. AC head (Fig. 39)

1) Remove the reinforcement plate.
2) Remove the nut.
3) Pull out the AC head together with the base paying attention to the spring.

5-4. Tach head (Fig. 37)

1) Open the servo PC Board.
2) Remove the tach head bracket fixing screw.
3) Remove 2 leads from the head.

5-5. System control PC Board/operation switch PC Board (Fig. 35)

1) Press 2 stoppers in the directions of the arrows to open the PC Board.
2) Remove the connector.

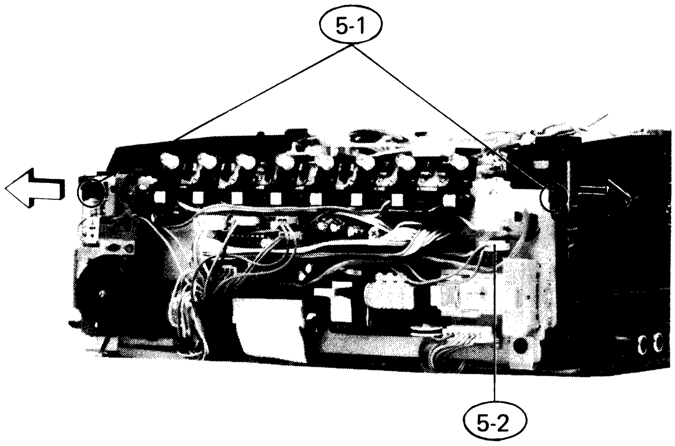


Fig. 35

5-6. Servo PC Board/Luminance/Chroma PC Board (Fig. 36)

1) Open the system control PC Board.
2) Press 2 stoppers in the directions of the arrows to open the PC Board.

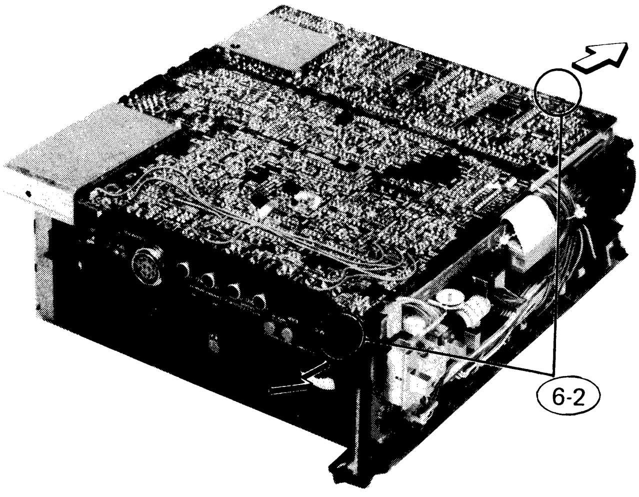


Fig. 36

5-7. Cylinder motor driver PC Board

1) Pull out upward.

5-8. Loading motor driver PC Board (Fig. 39)

1) Remove 1 screw.

5-9. Reel motor driver (Fig. 37)

1) Remove 1 screw.

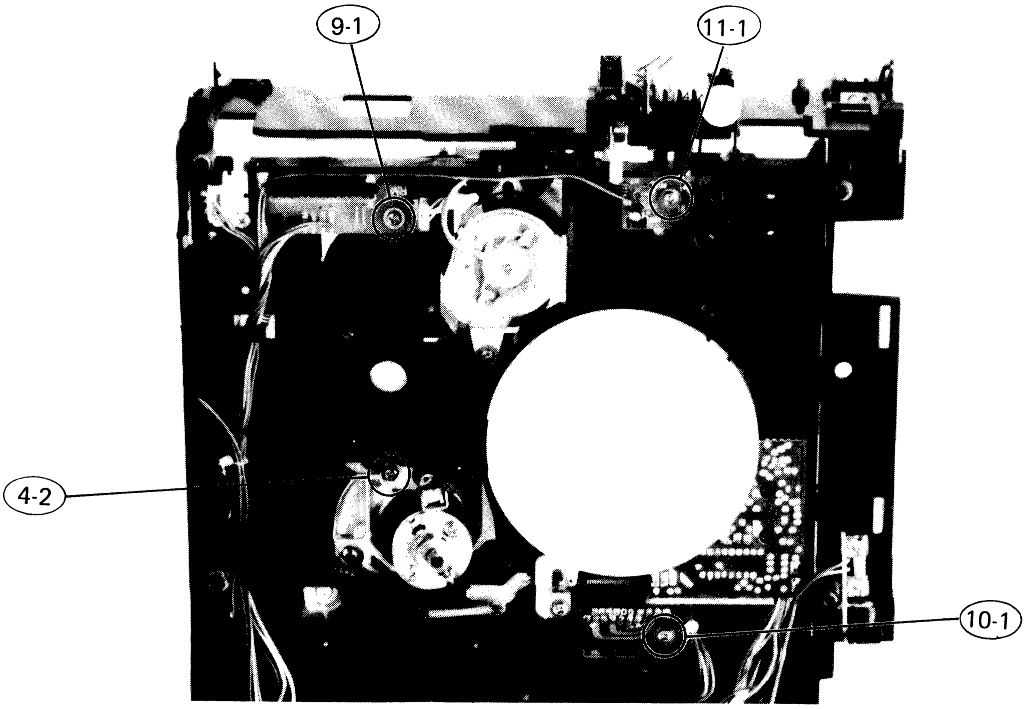


Fig. 37

5-10. Mechanical state sensor switch PC Board (Fig. 37)

1) Remove 1 screw.

5-11. Reel sensor PC Board (Fig. 37)

1) Remove 1 screw.

5-12. Auto colour PC Board (Fig. 38)

1) Remove 2 screws.

5-13. Audio PC Board

1) Pull out upward.

5-14. RF converter (Fig. 39)

1) Pull out the audio PC Board.
2) Remove 1 screw.

5-15. Switching regulator (Fig. 38)

1) Open the servo PC Board.
2) Unsolder 3 positions soldered to the PC Board.

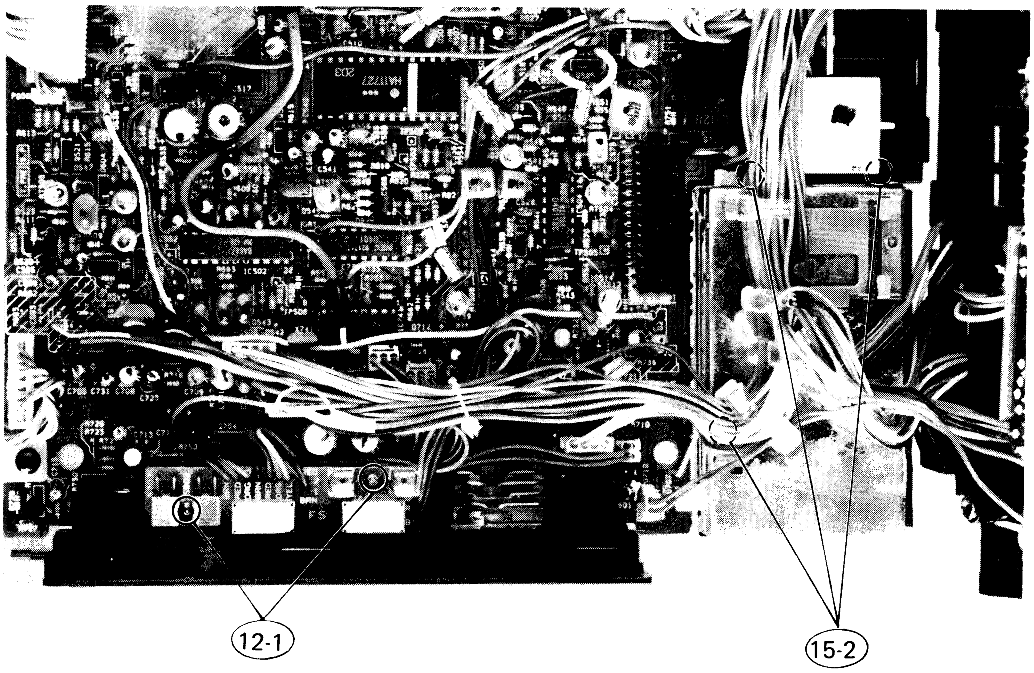


Fig. 38

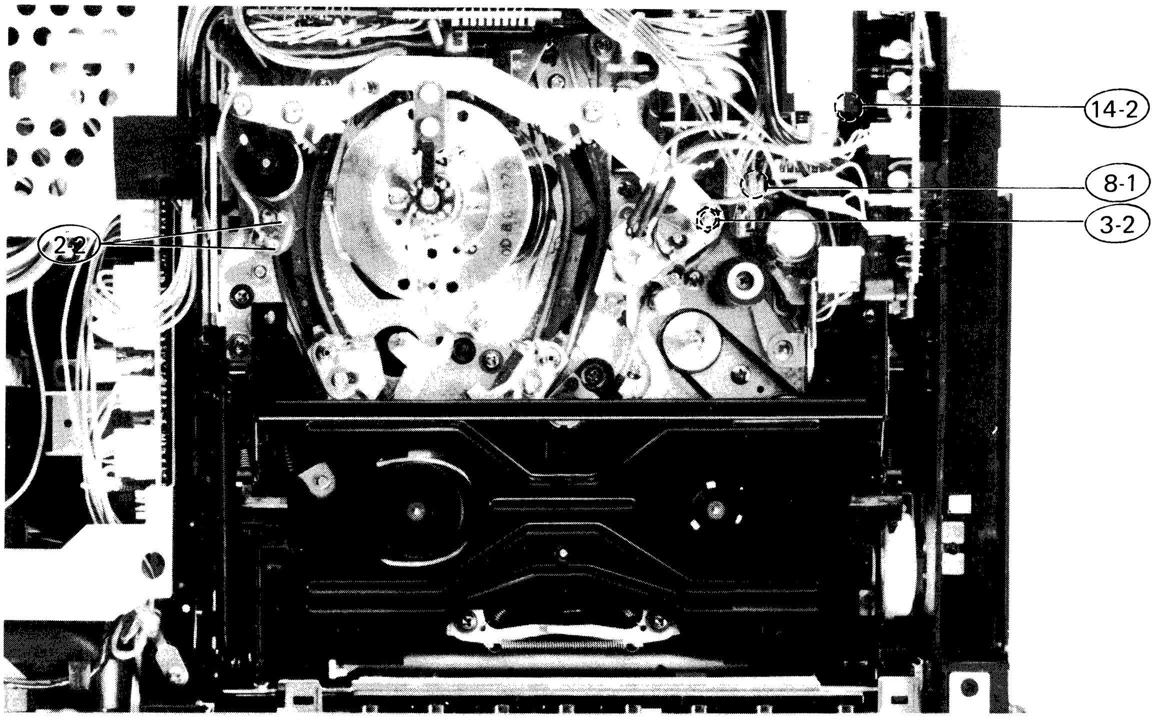


Fig. 39

5-16. Volume control PC board (Fig. 40)

1) Remove 1 screw.
2) Spread 2 stoppers in the top/bottom directions.

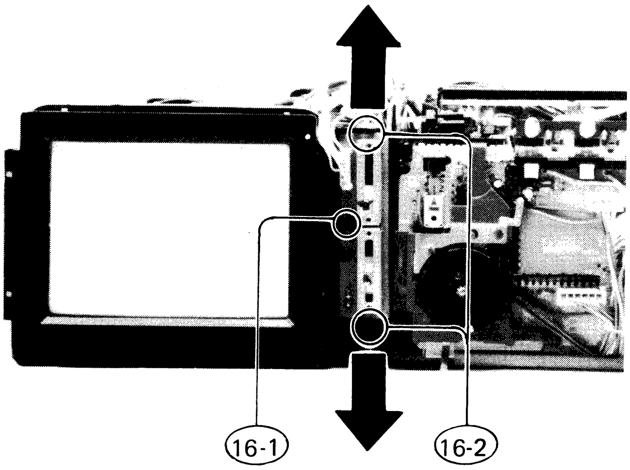


Fig. 40

5-17. Audio/regulator PC board (Figs. 41, 42)

1) Remove 5 connectors (CN001, 002, 101, 102, 103)
2) Remove 5 screws to remove the shield plate.
3) Remove the stoppers in the directions of the arrows and lift the PC board upward.

Note: Connect 5 connectors removed in 1) above as they were before when performing adjustment.

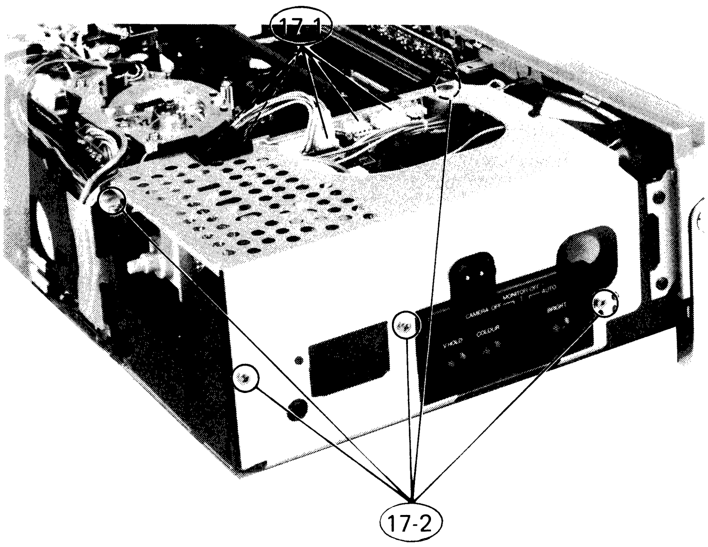


Fig. 41

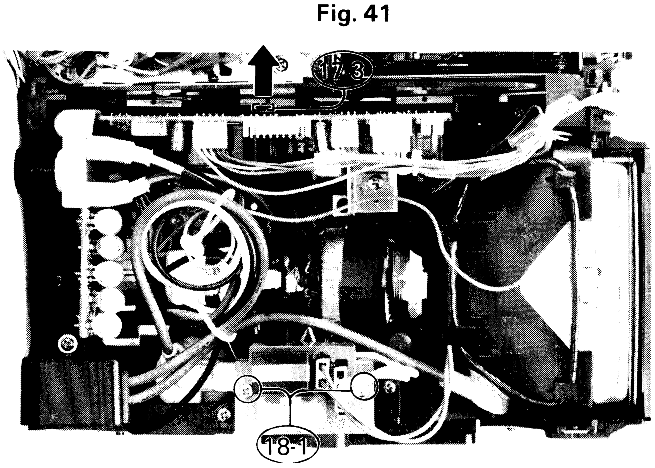


Fig. 42

5-18. Degaussing PC board (Fig. 42)

1) Remove 2 screws.

5-19. Focus block (Fig. 43)

1) Spread the stopper backward.
2) Pull out the focus block upward.

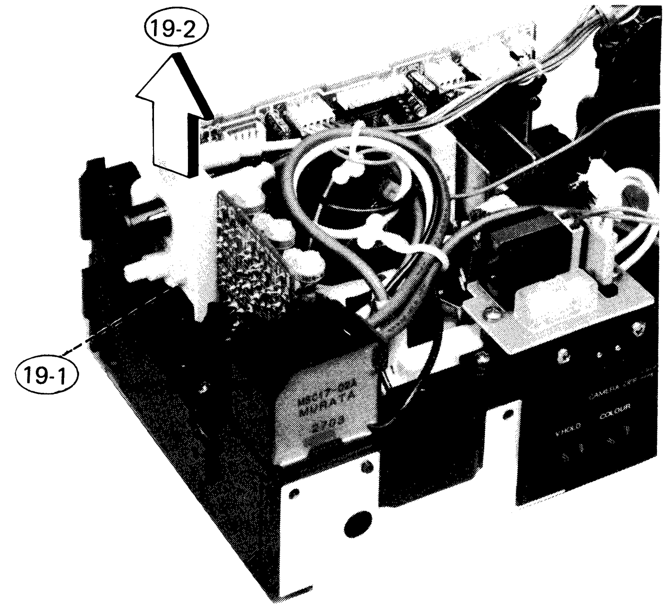


Fig. 43

5-20. 5 inch CPT (Fig. 44)

1) Insert a ⊖ screwdriver, etc. into the square hole to release locking of the stopper.
2) Pull out the CPT upward while pressing the stopper.

Note: Be careful not to damage the CPT surface when replacing it.

5-21. CPT socket PC board (Fig 44)

1) Pull out in the direction of the arrow.

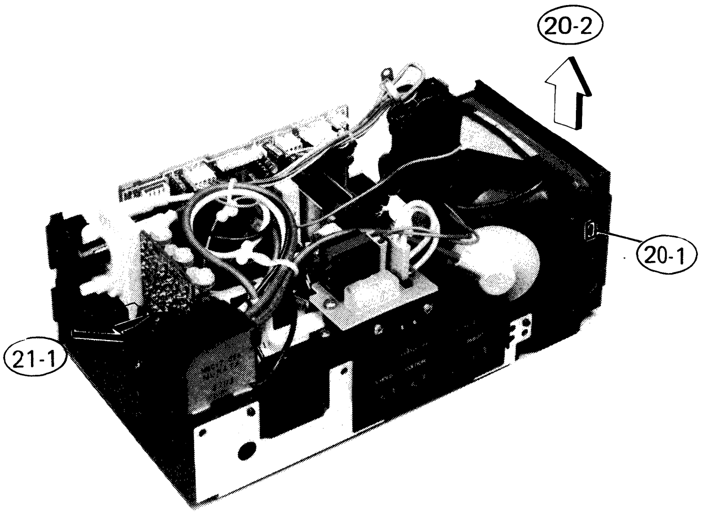


Fig. 44

5-22. Colour monitor PC board (Figs. 45, 46)

1) Remove 4 screws. (The shield plate can also be removed.)
2) Spread 2 stoppers upward.
3) Open the PC board in the direction of the arrow.

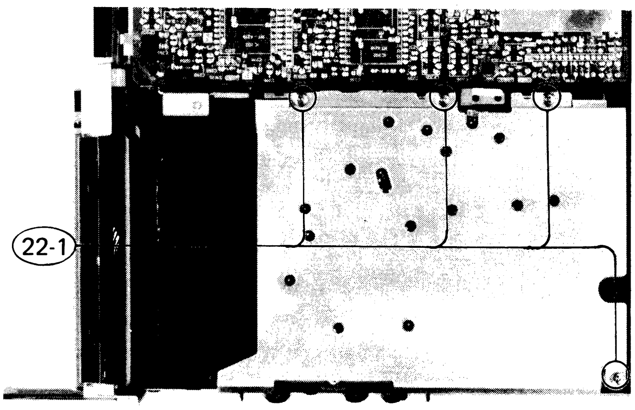


Fig. 45

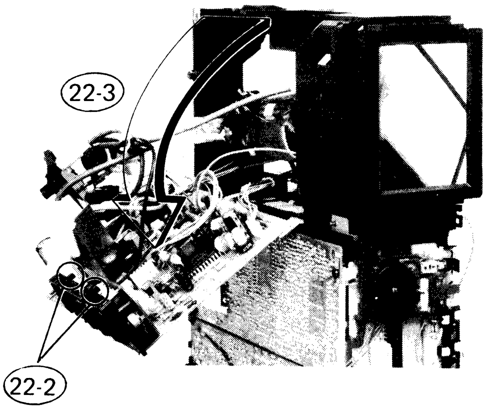


Fig. 46

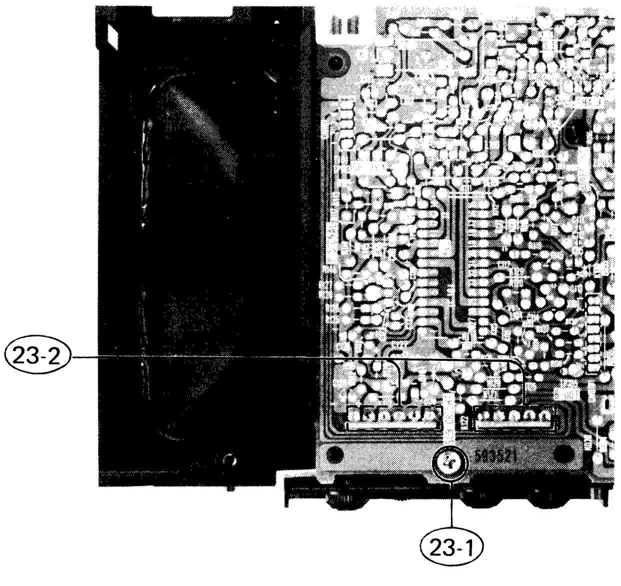


Fig. 47

5-23. Monitor select switch PC board (Figs. 46, 47, 48)

1) Remove 1 screw.
2) Unsolder the soldered sections (11 positions).
3) Open the colour monitor PC board.
4) Remove 3 knobs (vertical hold control, colour control, brightness control) and 2 screws.

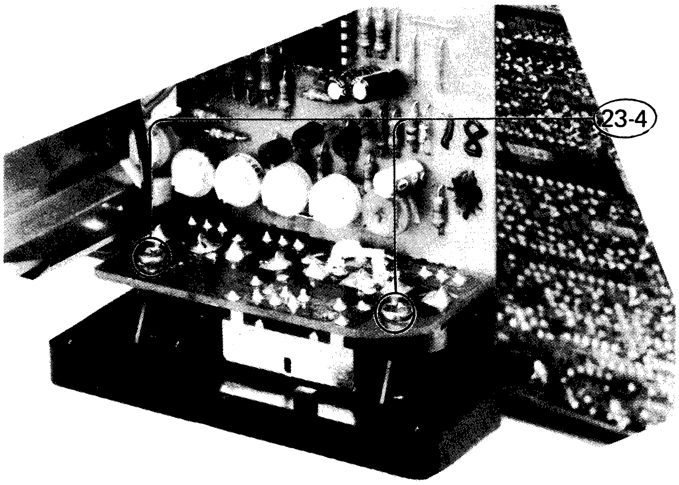


Fig. 48

Cautions

1. Be sure to arrange wiring as before when assembling the PC boards after repair. Be specially careful in wiring of the high voltage cable. (Refer to the wiring diagram.)
2. Be sure to install the shield plate and GND plate securely when assembling the PC boards.
3. Disassemble the set according to the work procedure shown above.

ADJUSTMENT

SERVICING JIGS AND TOOLS

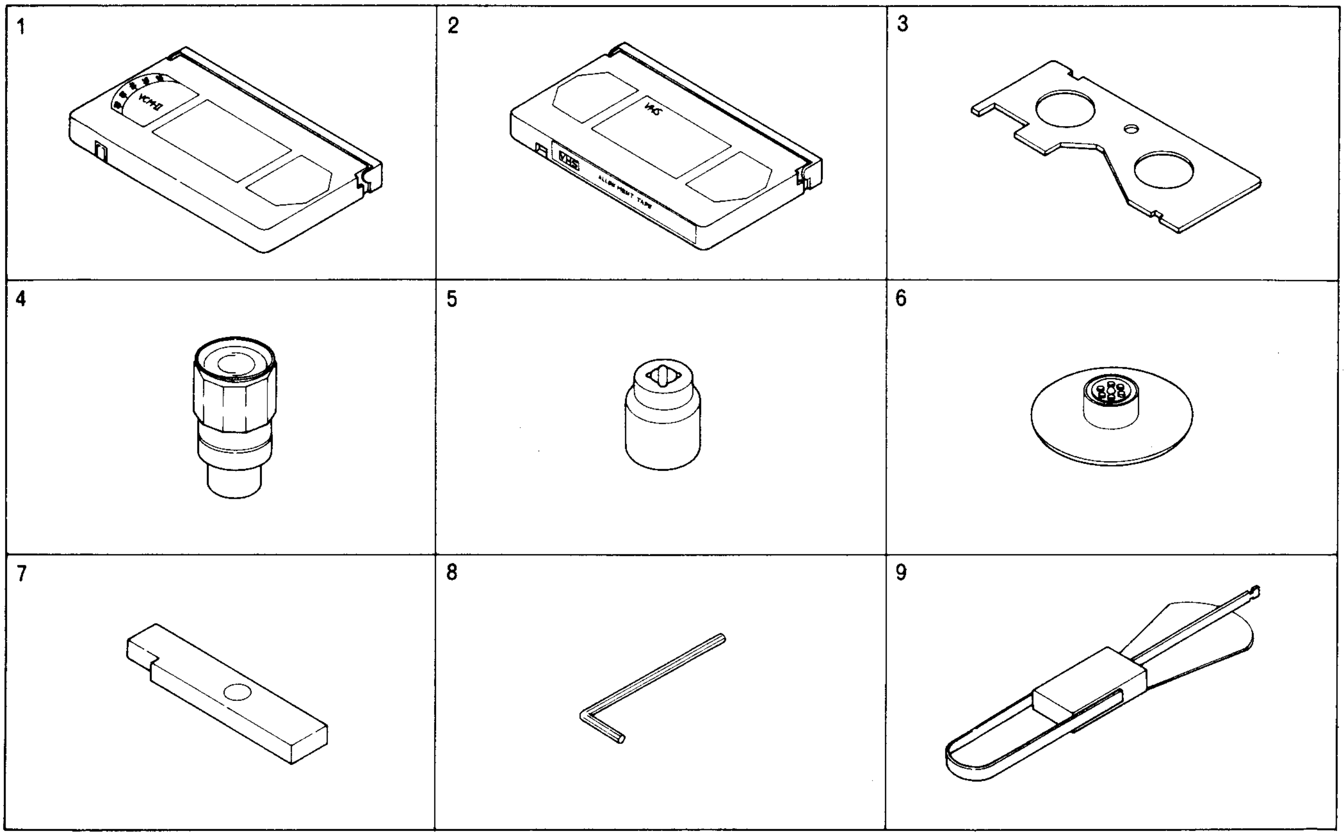


Fig. 49

ITEM	PARTS NAME	P. NO	ITEM	PARTS NAME	P. NO
1.	Back tension meter	7099004	6.	Tension measurement reel	7099043
2.	Alignment tape	7099052	7.	Reel disk height jig	7099001
3.	Height reference plate (Master plane)	7099041	8.	1.5 mm hexagonal wrench	–
4.	Torque gauge	7099039	9.	Fan type tension gauge	–
5.	Torque gauge adaptor	7099035			

Method of use of torque gauge, torque gauge adaptor (Measuring medium torque: 50 – 300 gcm)

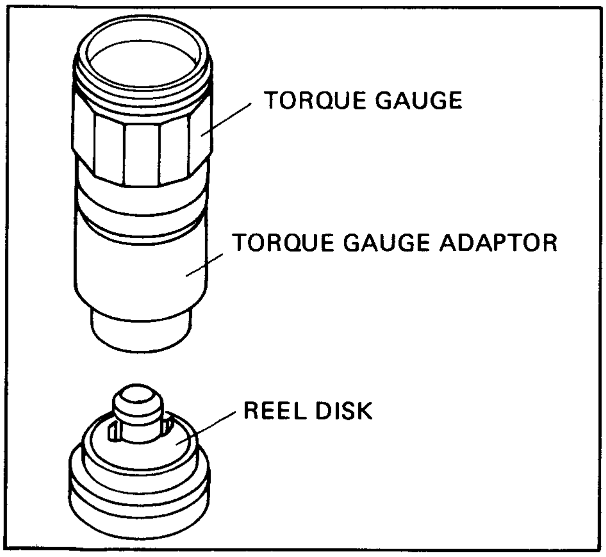

TORQUE GAUGE
TORQUE GAUGE ADAPTOR
REEL DISK

Fig. 50

Method of use of Fan type tension gauge and Tension measurement reel (Measuring weak torque, strong torque)

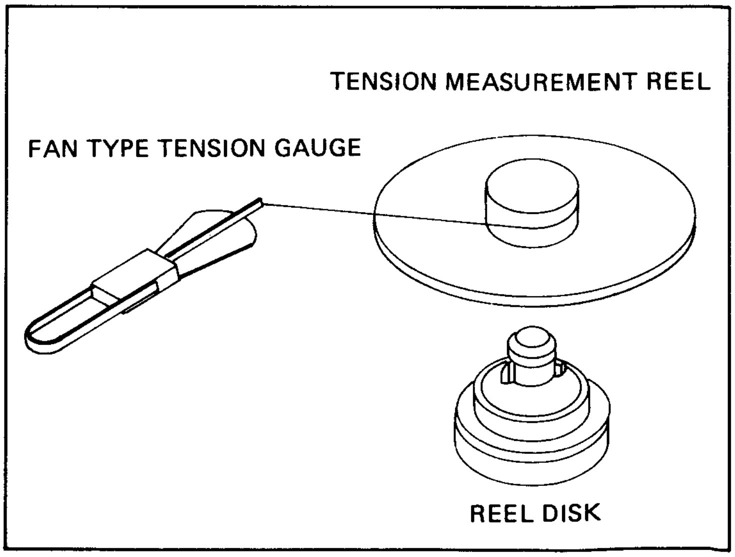
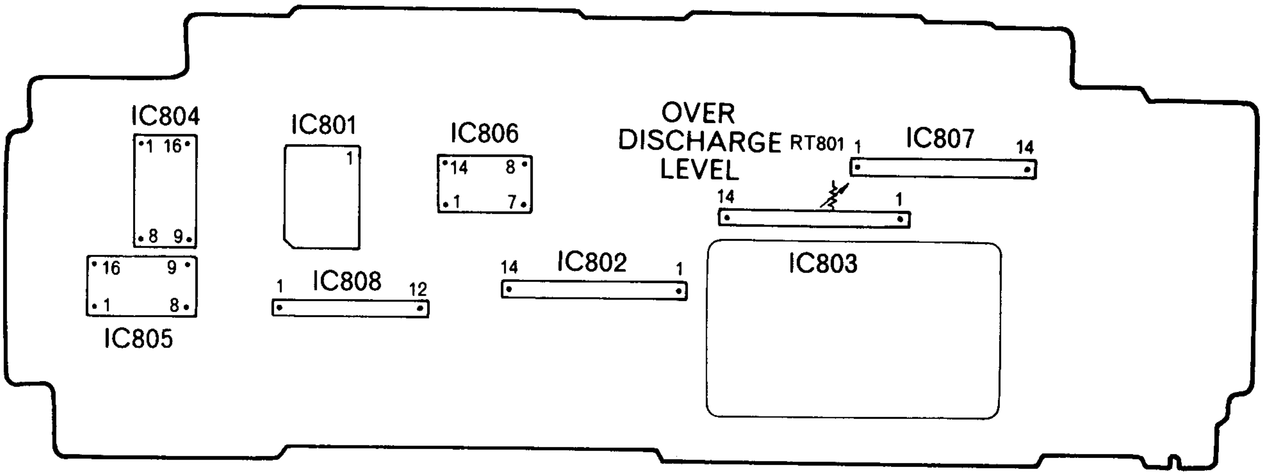

TENSION MEASUREMENT REEL
FAN TYPE TENSION GAUGE
REEL DISK

Fig. 51

VIDEO DECK BLOCK
1. ELECTRIC CIRCUIT ADJUSTMENT

System control circuit adjustment (System control PC Board)


IC804
1
16
8
9
IC801
1
IC806
14
8
1
7
OVER DISCHARGE LEVEL
RT801
1
IC807
14
14
1
16
9
1
8
IC805
1
IC808
12
14
IC802
1
IC803

SYSTEM CONTROL CIRCUIT BOARD [PARTS SIDE]

Fig. 52

Over-discharge level adjustment

1) Turn RT801 (OVER-DISCHARGE LEVEL) fully clockwise.
2) Connect the DC power supply to the internal battery jack of the VTR.

   Set the output voltage of the DC power supply to 11.2±0.05V.
3) Turn the operate switch on.
4) Adjust RT801 (OVER-DISCHARGE LEVEL) so that the pointer of the battery meter is set to the center between the green and red marks.

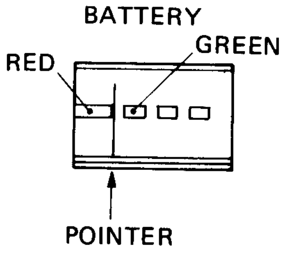
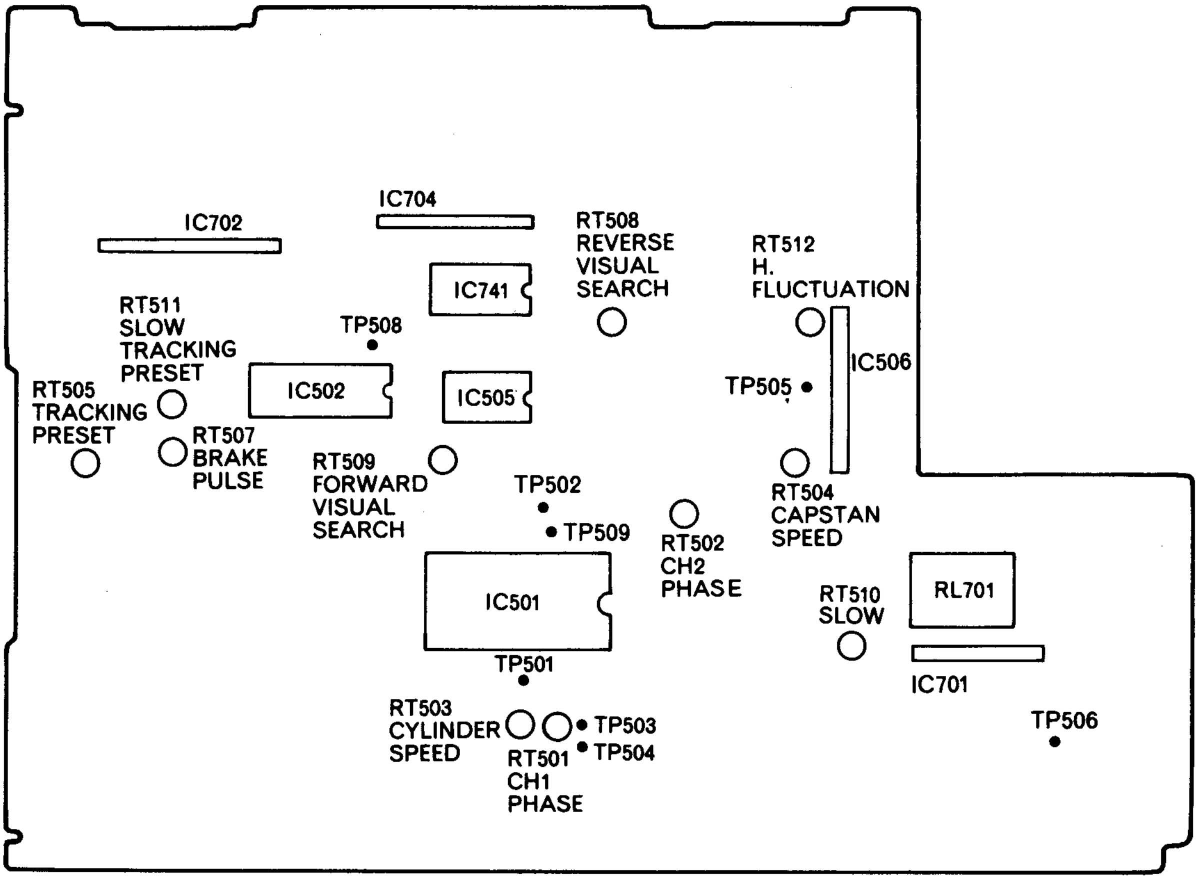

BATTERY
RED
GREEN
POINTER

Fig. 53

Servo circuit adjustment (Servo PC Board)


IC704
IC702
RT508
REVERSE
VISUAL
SEARCH
RT512
H.
FLUCTUATION
IC741
RT511
SLOW
TRACKING
PRESET
TP508
IC506
IC502
IC505
TP505
RT505
TRACKING
PRESET
RT507
BRAKE
PULSE
RT509
FORWARD
VISUAL
SEARCH
TP502
TP509
RT504
CAPSTAN
SPEED
RT502
CH2
PHASE
IC501
RT510
SLOW
RL701
TP501
IC701
RT503
CYLINDER
SPEED
TP503
TP504
RT501
CH1
PHASE
TP506

SERVO CIRCUIT BOARD [SOLDER SIDE]

Fig. 54

1. Cylinder speed adjustment

1) Record a TV broadcast.
2) Short-circuit between TP503 and TP504.
3) Connect the oscilloscope to TP501.
4) Adjust RT503 (CYLINDER SPEED) so that the pulse does not flow in the triangular wave.
5) Release short-circuit between TP503 and TP504.

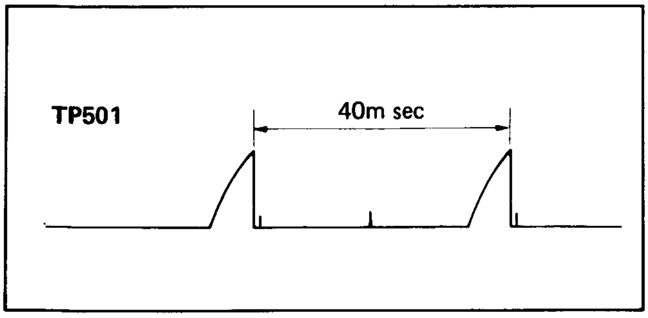

TP501
40m sec

Fig. 55

2. Capstan speed adjustment

1) Record a TV broadcast.
2) Short-circuit between TP503 and TP504.
3) Connect the oscilloscope to TP502.
4) Adjust RT504 (CAPSTAN SPEED) so that the pulse does not flow in the triangular wave.
5) Release short-circuit between TP503 and TP504.

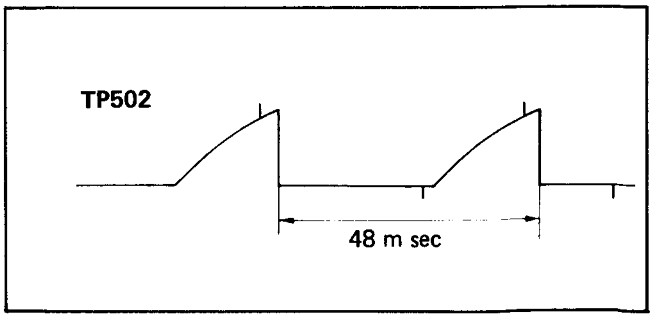

TP502
48 m sec

Fig. 56

3. CH-1/CH-2 phase adjustment

1) Playback the alignment tape.
2) Connect CH-1 of the oscilloscope to the video output terminal and CH-2 to TP206 (SW25Hz) of the luminance/chroma Board.
3) Apply synchronization to CH-2 to set the synchronization slope to "–".
4) Adjust RT501 (CH-1 PHASE) so that the front porch of the vertical synchronization signal is 6.5H after the trailing edge of the CH-2 waveform.
5) Set the synchronization slope to "+".
6) Adjust RT502 (CH-2 PHASE) so that the front porch of the vertical synchronization signal is 6.5H after the leading edge of the CH-2 waveform.

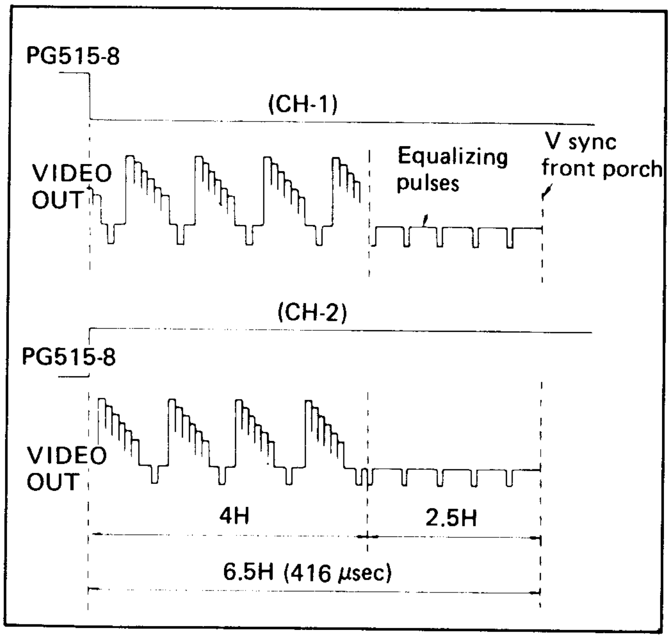


Fig. 57

4. Tracking preset adjustment

1) Set the tracking knob to the click position.
2) Record a TV broadcast.
3) Connect the oscilloscope to TP203 on the luminance/chroma Board.
4) Playback the recorded section.
Adjust RT505 (TRACKING PRESET) so that the points where the amplitudes of CH1 and CH2 FM envelops begin to drop are inphase.

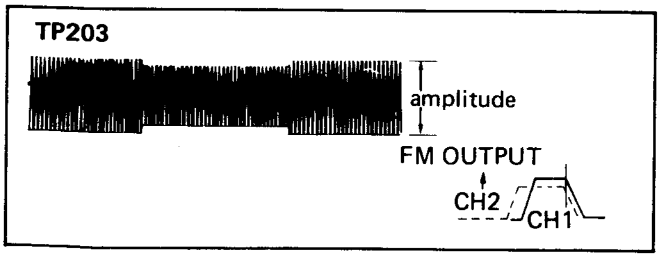


Fig. 58

5. Brake pulse, slow, slow tracking preset adjustment

1) Record a TV broadcast
2) Connect the remote control and slow-playback the recorded section.
Set the slow rate higher (approx. 1/5), and turn the slow tracking knob to the 12 o'clock position.
3) Connect the oscilloscope to TP506.
4) Adjust RT507 (BRAKE PULSE) to set the pulse width to 25 msec.

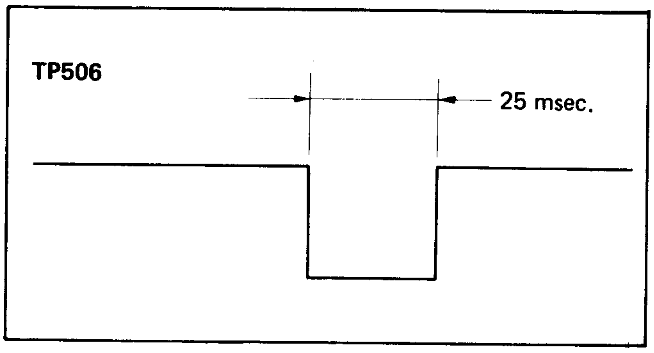


Fig. 59

5) Connect the oscilloscope to TP505.
6) Adjust RT510 (SLOW) to set the center of variation of the pulse width to 84 msec .

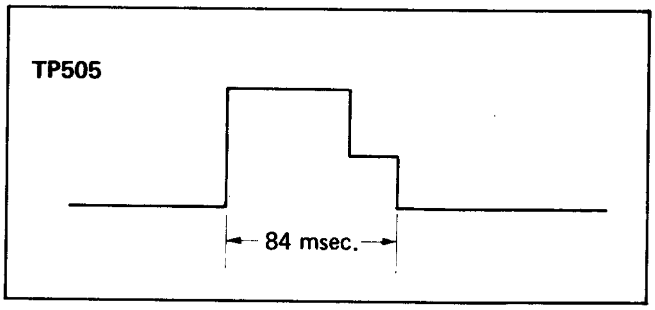


Fig. 60

7) Adjust RT511 (SLOW TRACKING PRESET) to set so that no noise appears in the played back picture.
When noise does appear, adjust so that it is even on the screen.

6. Visual search adjustment

Forward Visual Search

1) Connect a oscilloscope to TP508.
2) Play back a tape recorded with the colour bar Signal or the TV signal in the forward visual search mode.
3) Adjust RT509 (FORWARD VISUAL SEARCH) to obtain the 8 ms pulse period.
4) Adjust RT509 to stop the two noise bands on the TV screen.

Reverse Visual Search

1) Connect a oscilloscope to TP508.
2) Play back a tape recorded with the colour bar Signal or the TV signal in the reverse visual search mode.
3) Adjust RT508 (REVERSE VISUAL SEARCH) to obtain the 8 msec pulse period.
4) Adjust RT508 to Stop the three noise band on the TV screen.

Note: Reverse Visual Search Adjustment shall be performed after Forward Visual Search Adjustment.

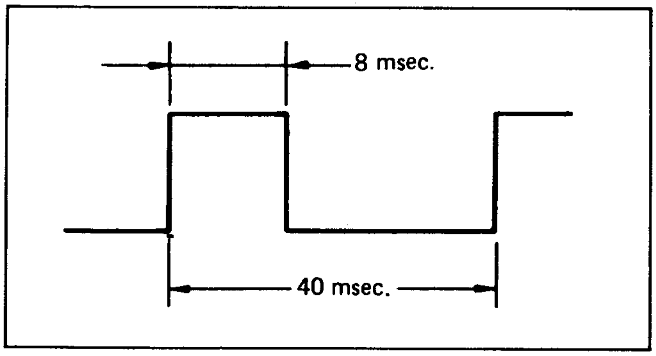


Fig. 61

7. Horizontal fluctuation adjustment

1) Connect the VTR to a TV set.
2) Load a recorded tape and place the instrument in the slow mode.
3) Set the slow speed control knob to 1/5 speed.
4) Adjust RT512 (H. FLUCTUATION) so that the horizontal fluctuation is minimum on the monitor screen.

Luminance/chroma circuit adjustment (Luminance/chroma PC Board)

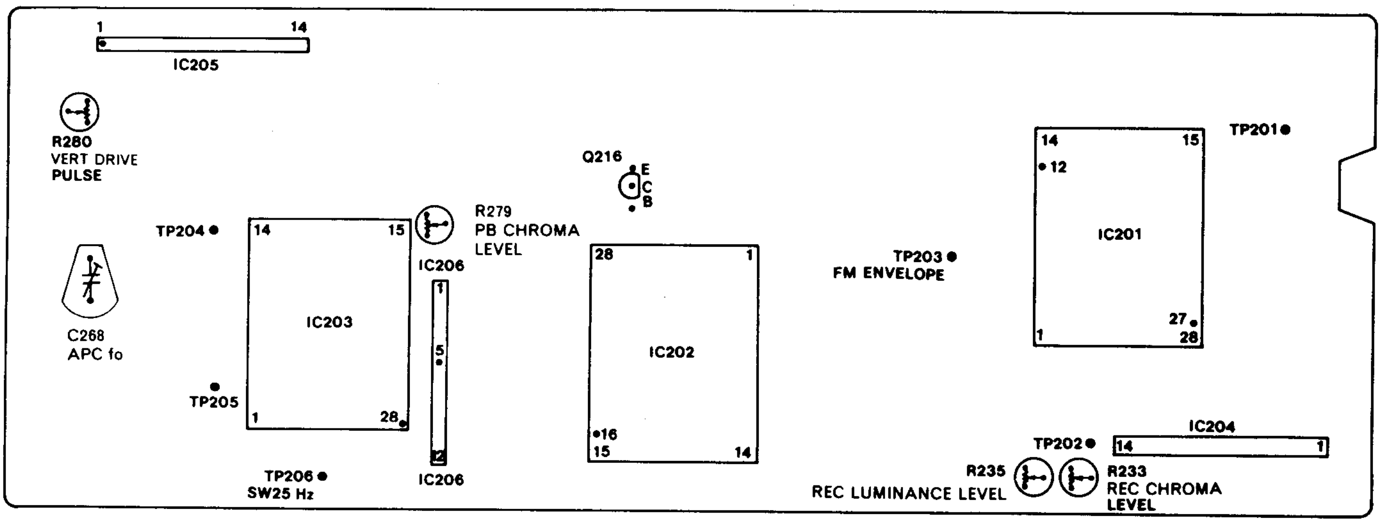

1
14
IC205
R280
VERT DRIVE
PULSE
TP204
14
15
R279
PB CHROMA
LEVEL
IC206
Q216
E
C
B
C268
APC fo
IC203
TP205
1
28
28
1
IC202
16
15
14
TP206
SW25 Hz
IC206
TP203
FM ENVELOPE
14
15
12
IC201
27
28
1
TP201
IC204
TP202
14
1
R235
REC LUMINANCE LEVEL
R233
REC CHROMA
LEVEL

Fig. 62 LUMINANCE/CHROMA CIRCUIT BOARD [SOLDER SIDE]

1. Record luminance level/record chroma level adjustment

1) Connect the colour bar generator to the video input terminal.
2) Record the colour bar.
3) Connect the oscilloscope to TP201.
4) Turn R235 (REC LUMINANCE LEVEL) to minimize the waveform.
5) Adjust R233 (REC CHROMA LEVEL) to set the color level to the value shown in the table while matching to the cylinder mark.

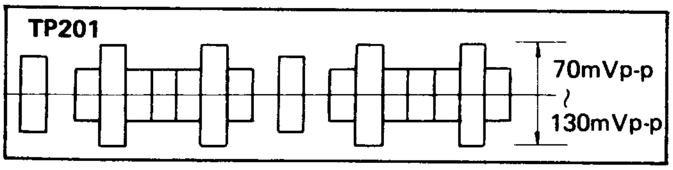

TP201
70mVp-p
~
130mVp-p

Fig. 63

6) Adjust R235 (REC LUMINANCE LEVEL) to set the LUMINANCE level to 580 mVp-p.

REC Chroma level

Cylinder mark	Level
Without marks	70 mVp-p
1	80 mVp-p
2	100 mVp-p
3	120 mVp-p
4	130 mVp-p

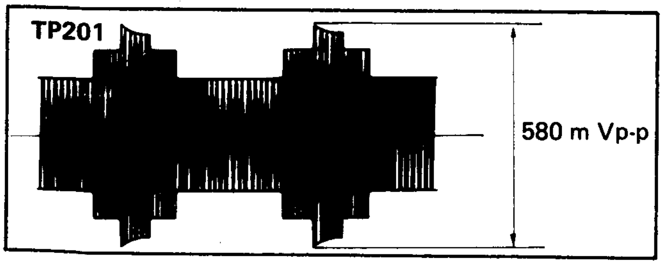

TP201
580 m Vp-p

Fig. 64

2. Vertical drive pulse adjustment

1) Record a TV broadcast.
2) Still-playback the recorded section.
3) Adjust R280 (VERT DRIVE PULSE) so that the picture does not fluctuate.
4) Set to the SLOW mode and check that the picture does not fluctuate.
5) Re-adjust it when any flucturation occurs.

Note: This adjustment can be performed by removing the Cap on the bottom cover, shown in the next figure, without removing the top cover and bottom cover.

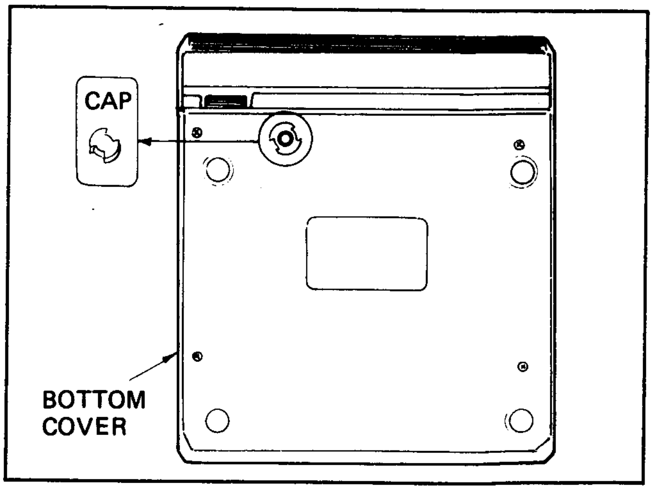

CAP
BOTTOM
COVER

Fig. 65

3. APC fo adjustment

1) Set the VTR stop mode
2) Connect the counter to TP204.
3) Adjust C268 so that the frequency measured by the counter is 4.435572 MHz ± 50 Hz.

4. Playback chroma level adjustment

1) Playback the colour bar signal of the alignment tape.
2) Connect the osciloscope to the video output.
3) Adjust R279 (PB CHROMA LEVEL) so that the waveform is as shown in the figure.

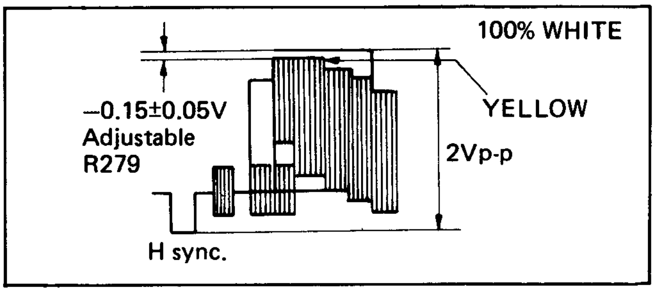
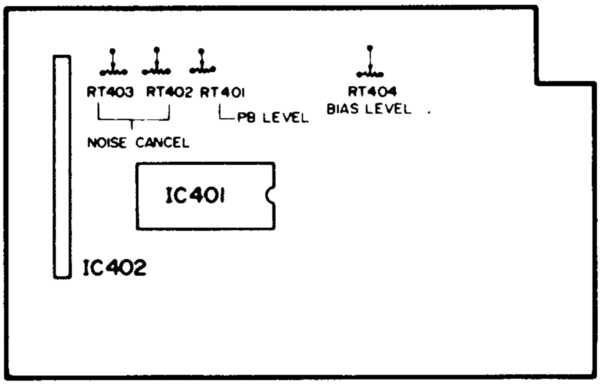


Fig. 66

Audio circuit adjustment (Audio PC Board)


RT403
RT402
RT401
NOISE CANCEL
PB LEVEL
RT404
BIAS LEVEL
IC401
IC402

AUDIO CIRCUIT BOARD [PARTS SIDE]

Fig. 67

1. Playback level adjustment

1) Playback the 1kHz signal of the alignment tape.
2) Connect the VTVM to the audio output terminal.
3) Adjust RT401 (PB LEVEL) to set the level to – 6dB ±1dB.

2. Bias level adjustment

1) Load a blank tape and set the VTR to the record mode.
2) Connect the VTVM to 2 pins of the AC head PC Board.
3) Adjust RT404 (BIAS LEVEL) to set the level to 1.1 ± 0.05 mVrms.

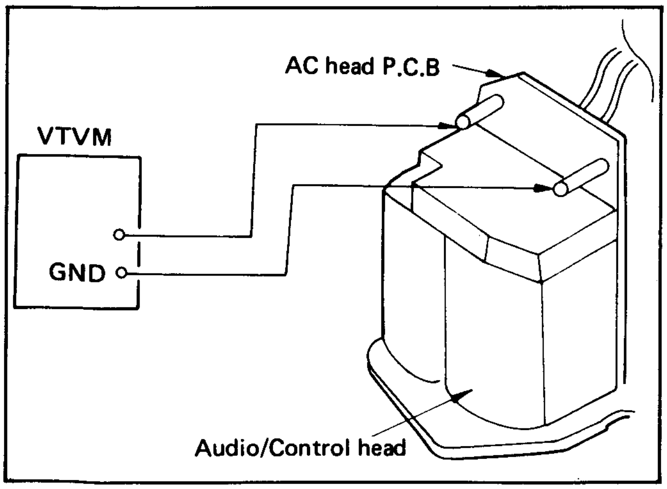

AC head P.C.B
VTVM
GND
Audio/Control head

Fig. 68

3. Noise cancel adjustment

1) Load a blank tape and set the VTR to the PLAY mode.
2) Connect the CH-1 probe of the oscilloscope to the audio output terminal.
3) Adjust RT402, RT403 (NOISE CANCEL) alternately to minimize noise in the CH-1 waveform.

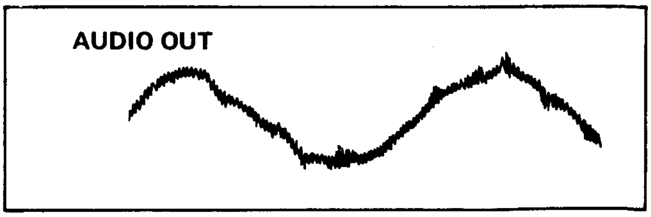


Fig. 69

2. MECHANICAL ADJUSTMENT

Adjusting all parts

Cylinder tach head adjustment

1) (Rough adjustment)
   Loosen the tach head bracket fixing screw and move the bracket to set the interval between the head and magnet to 0.5 ± 0.1 mm.
   (Fine adjustment)
   Observing the waveform of IC501 (HA-11727) 2 pin, perform the Gap adjustment to meet the number of waves to the specified number.

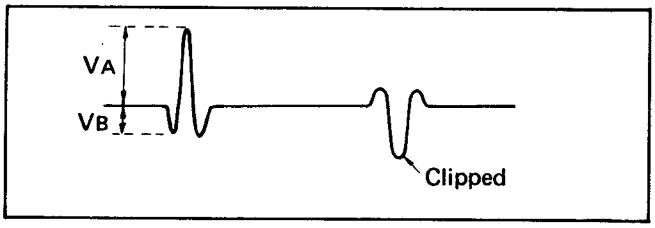


Fig. 70

By observing the above positive polarity pulse, adjust to satisfy the following relation; $V_A > 0.75V_p$, $V_B < 0.39V_p$

2) Adjust the other magnet in the same way, and tighten screws after both magnets satisfy the values given above.

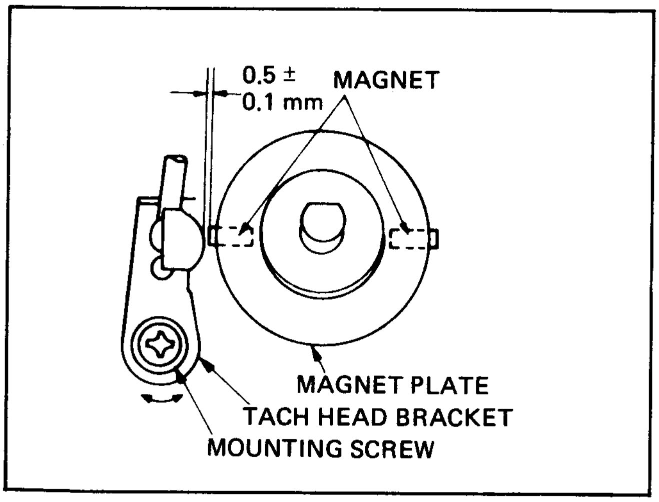

0.5 ± 0.1 mm
MAGNET
MAGNET PLATE
TACH HEAD BRACKET
MOUNTING SCREW

Fig. 71

Mechanical state sensor switch adjustment

1) Turn the pulley in the unloading direction until it stops.
2) Loosen the fixing screw and move the switch so that the V-shaped groove of the switch and the triangular hole match when viewed from the top.
3) Tighten the fixing screw.

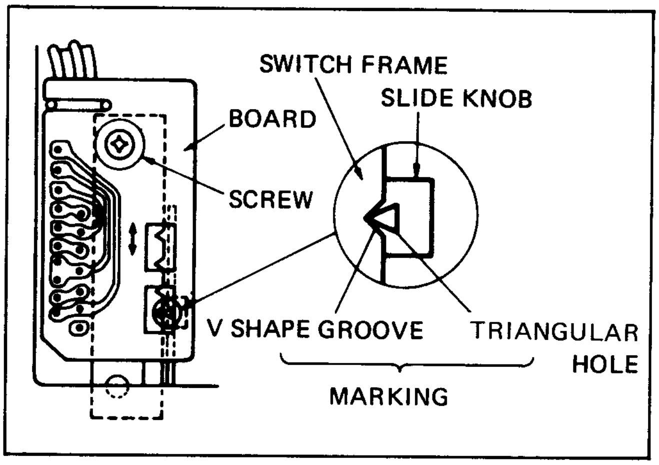

SWITCH FRAME
SLIDE KNOB
BOARD
SCREW
V SHAPE GROOVE
TRIANGULAR HOLE
MARKING

Fig. 72

Reel sensor adjustment

1) Loosen the reel sensor PC Board fixing screws.
2) Tighten screws after setting the interval between the sensor and magnet to less than 1.5 mm.

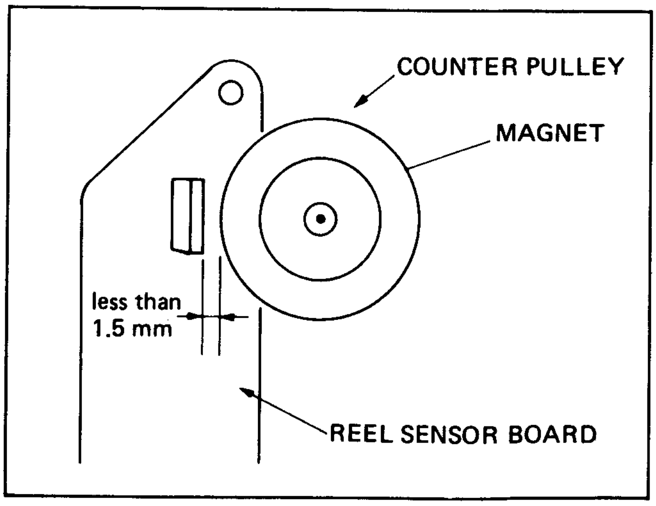

COUNTER PULLEY
MAGNET
less than 1.5 mm
REEL SENSOR BOARD

Fig. 73

Reel disk height adjustment

1) Mount the master plane to the cassette holder and hang the cassette holder.
2) Place the Reel disk height jig on the master plane and apply it to the reel disk.
3) Adjust the number of spacers (2 types; 0.25 mm thick, 0.5 mm thick) at the bottom of the reel disk to adjust the height of the reel disk so that it can enter between jigs A and B.
   (Insert the spacer between the reel disk and the metal washer)

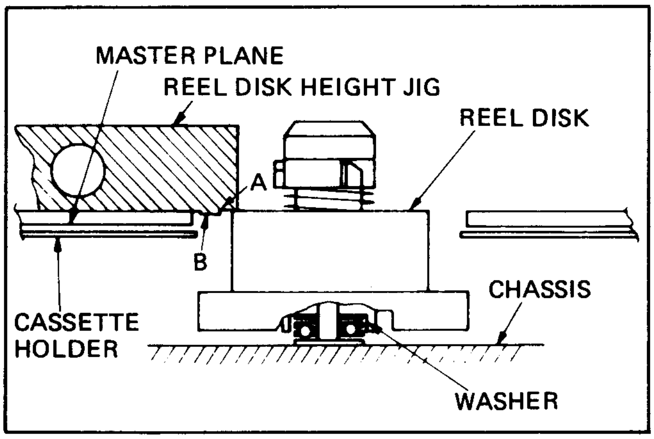

MASTER PLANE
REEL DISK HEIGHT JIG
REEL DISK
A
B
CHASSIS
CASSETTE HOLDER
WASHER

Fig. 74

Guide pole adjustment

1) Mount the master plane to the cassette holder.
2) Place the reel disk height jig on the master plane and lightly press it against the guide pole.
3) Turn the nut at the top of the guide pole and set the interval between the top of the square gauge and the top flange to 0.1 ± 0.1 mm.
4) Remove the jig.
5) Perform "Running adjustment".

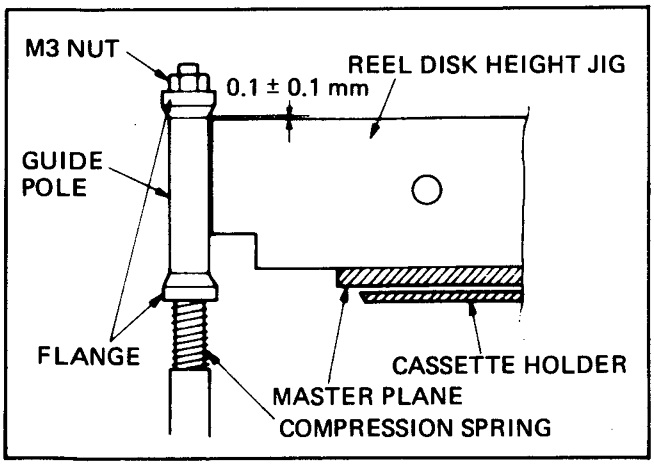

M3 NUT
REEL DISK HEIGHT JIG
0.1 ± 0.1 mm
GUIDE POLE
FLANGE
CASSETTE HOLDER
MASTER PLANE
COMPRESSION SPRING

Fig. 75

AC Head adjustment

(Rough adjustment)

Tilt adjustment

1) Mount the master plane to the cassette holder and bring the reel disk height jig nearer to the AC head.
2) Turn the tilt adjustment screw so that the AC head surface and the reel disk height jig surface are parallel.

Azimuth adjustment

1) Turn the azimuth adjustment screw so that the side of the AC head and the side of the reel disk height jig are parallel.
2) Remove the jig.

Height adjustment

1) Load a tape, and stop in the loaded condition.
2) Turn the height adjustment screw so that the core top of the audio erase head is a little above the tape (0.2 mm or less). The core bottom of the CONTROL head should slightly extruded from the tape at this time.

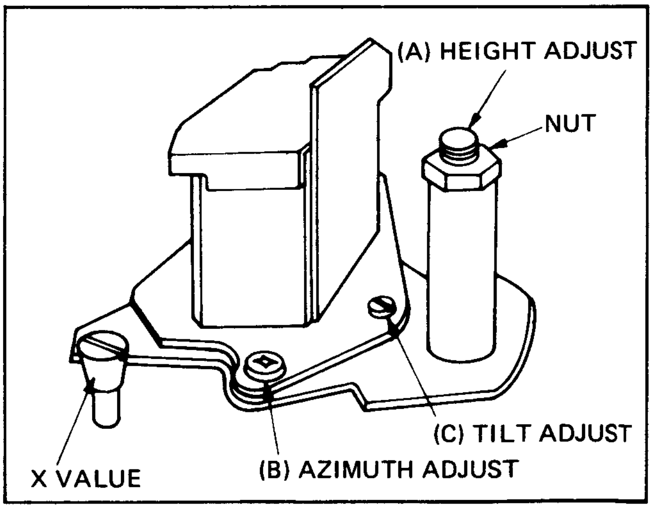

(A) HEIGHT ADJUST
NUT
(C) TILT ADJUST
X VALUE
(B) AZIMUTH ADJUST

Fig. 76

(Fine adjustment)

Tilt adjustment

1) Play back the 6 kHz audio signal of the alignment tape.
2) Connect the oscilloscope to the audio output terminal.
3) Adjust the tilt adjustment screw to minimize fluctuation of audio level in the audio output.

Azimuth adjustment

1) Adjust the azimuth adjustment screw to maximize the audio output of 6 kHz signal.

Height adjustment

1) Adjust the height adjustment screw to maximize the audio output.

X value adjustment

1) Adjust the right/left motion of the A/C head base plate using the X screw so that the output of the FM envelope waveform is a maximum, with the tracking volume control set at the click position.

Alignment cassette
Osciloscope
Envelope waveform (TP203 /TP206 [Trigger] on the Luminance/Chroma board)

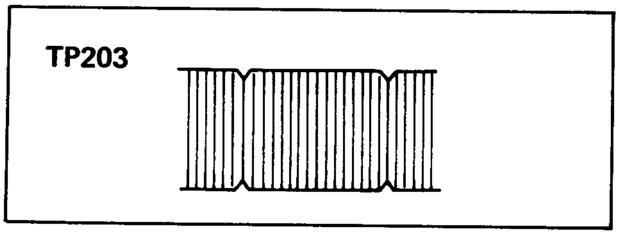


Fig. 77

Tension pole position and tension adjustment

Position adjustment

1) Cover the light-receiving port of the supply end sensor using paper, etc.
2) Set the VTR to the PLAY mode without loading the tape.
3) Loosen the tension band fixing screw and put a screwdriver between the band holder and the groove in the chassis.
4) Move the band holder using the screwdriver, and set the gap between the tension arm and the fixed guide to 1.0 ±0.5 mm.
5) Set the VTR to the STOP mode and tighten the screw.

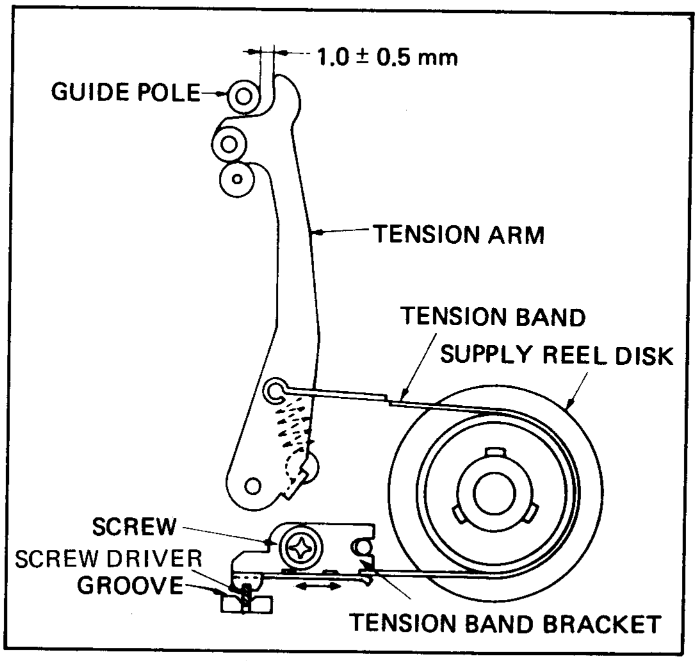


Fig. 78

Tension adjustment

1) Loosen the spring holder fixing screw.
2) Mount the back-tension meter and set the VTR to the PLAY mode.
3) Put a screwdriver in the tension adjustment groove on the left side of the set.
4) Move the spring holder and set tension to 30 ~ 45g cm.

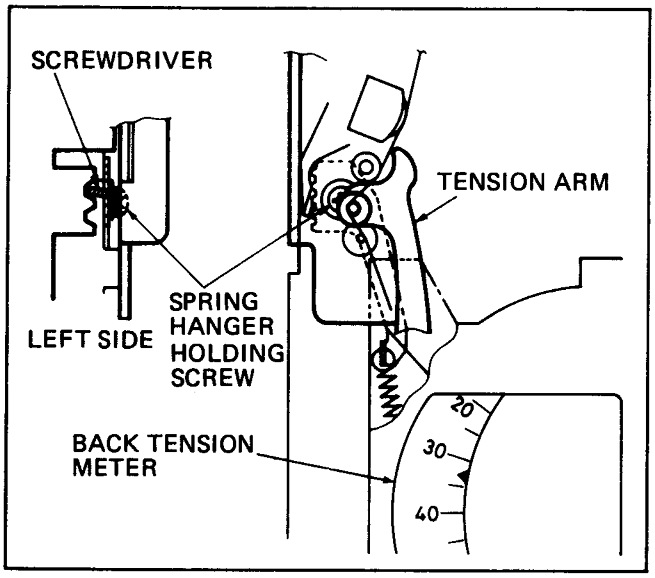

SCREWDRIVER
TENSION ARM
SPRING HANGER HOLDING SCREW
LEFT SIDE
BACK TENSION METER
20
30
40

Fig. 79

5) Set the VTR to the STOP mode and tighten the screw.
Check the pole position after adjusting tension.
When both values are not satified, repeat adjustment.
6) Remove the paper used for covering the sensor after adjustment is completed.

Inclined guide adjustment

1) Run a blank tape.
2) Loosen the inclined guide fixing screw.
3) Move the guide to set so that no crease or curl occurs, and then lock the fixing screw.
Be sure not to turn the guide roller fixing screw at this time.
4) Perform "Running adjustment".

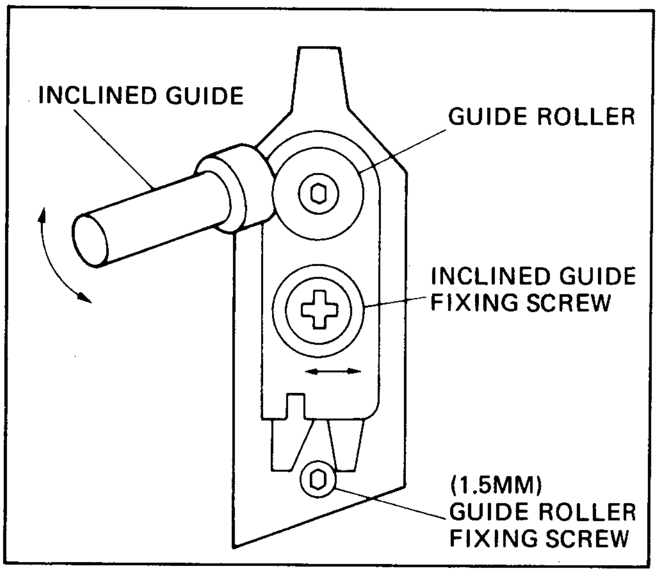

INCLINED GUIDE
GUIDE ROLLER
INCLINED GUIDE FIXING SCREW
(1.5MM) GUIDE ROLLER FIXING SCREW

Fig. 80

Checking torques of all parts

The measured values listed below are reference.

	Item	Mode	Measured reel	Measured value
1	Main brake torque	STOP	Both reels	200 gcm or more
2	Slack removal torque	Unloading	Supply reel	100 ~ 200 gcm
3	Rewind	REW	Supply reel	400 gcm or more
4	Take-up	PLAY	Take-up reel	70 ~ 120 gcm
5	FF	F. FWD	Take-up reel	400 gcm or more
6	Supply back-tension	F. FWD	Supply reel	4 ~ 15 gcm
7	Take-up back-tension	REW	Take-up reel	4 ~ 15 gcm
8	Take-up brake torque	(1) ◀◀Visual search (2) Loading (3) Unloading (4) REC Pause	Take-up reel	80 ~ 140 gcm
9	Search torque	◀◀ Visual search	Supply reel	230 ~ 300 gcm

Table 1

Tape transport adjustment

It is required to perform the running check adjustment shown below when the upper cylinder or AC head is replaced or removed and refitted or when the tape guide pieces (fixed guide post, impedance roller, guide roller, etc.) are replaced. Do not detach or adjust the parts shown below. They are adjusted and fixed in the factory using fine jigs, so when they are detached and adjusted, overall running adjustment becomes impossible.

1. Left/right catcher installation screws.

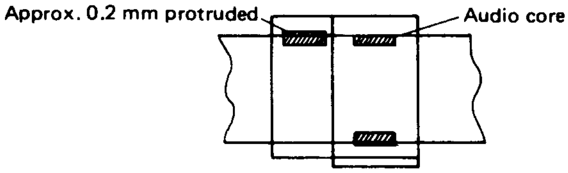
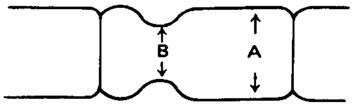
Check item	Judgement	Tool/measuring instrument
Back-tension	30 ~ 45 gr/cm (VTR in horizontal)	Back-tension meter
Guide pole	Tape should slide along the lower flange and not crease or curl.	By eye
Inclined guide and guide roller	Conspicuous creases or curls not present in tape. No adherence of dust.	By eye
Tape	Conspicuous distortion of the tape or change should not be present.	By eye
Impedance roller	Roller should rotate smoothly	By eye
AC head	Tape should keep contact fully with the control head core and audio head core. 	By eye Diagram on the left shows reference values.
Envelope Playback staircase wavefrom alignment tape: Flatness Fluctuation X value	Conspicuous fluctuation should not be present Set the envelope to 70% of the max. amplitude using the tracking VR; the min. amplitude should be 50% or more of the original max. amplitude (Note-1) The fluctuation in width of the envelope should be 13% or less. Envelope should be within 95% or more of max. with the tracking knob set to the click position.	Alignment tape Oscilloscope (TP203, TP206-Trigger)  B/A ≧ 0.67 Envelop wave

Table 2

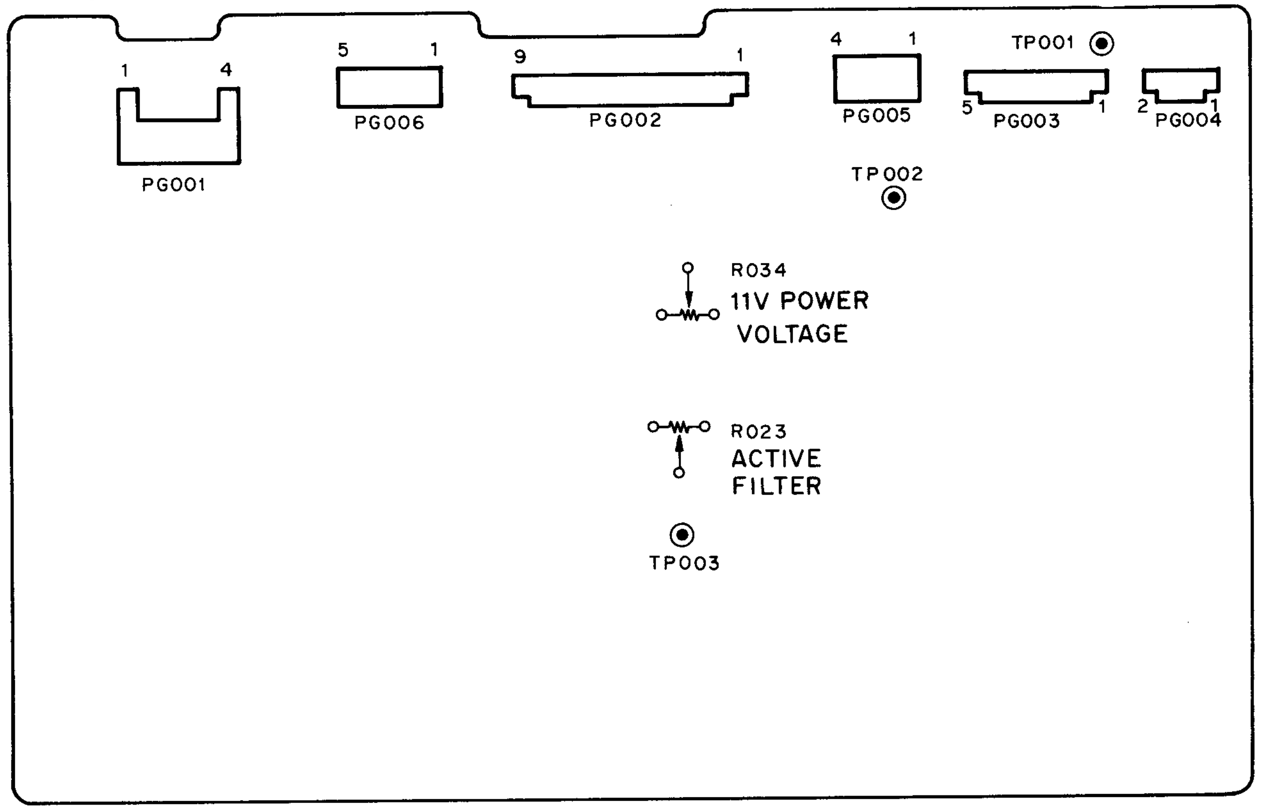
Adjust the positions shown below depending on the parts replaced when parts are refitted or replaced.

1. When the upper cylinder is replaced.

	Judgement
Guide roller height	Creases and curls should not occur in the tape
Inclined guide angle	Check fluctuation and flatness of the envelope
	Check, X value, AC head position, switching point, REC LUMINANCE CHROMA level
Video Head Change	Chack following adjustments Page. 32 Section 3 CH1/CH2 phase adjustment (switching point) Page. 32 Section 4 Tracking adjustment. Page. 34 Section 1 Record luminance level/Record chrom level adjustment and playback chroma level adjustment.

Table 3

COLOUR MONITOR BLOCK
ELECTRIC CIRCUIT ADJUSTMENT
Audio/regulator Circuit Adjustment (Audio/regulator PC board)


1
4
PG001
5
1
PG006
9
1
PG002
4
1
PG005
TP001
5
1
PG003
2
1
PG004
TP002
R034
11V POWER
VOLTAGE
R023
ACTIVE
FILTER
TP003

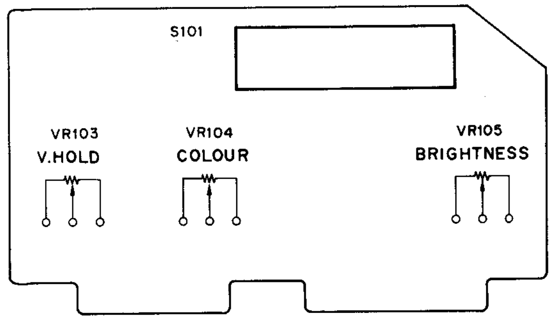
AUDIO/REGULATOR CIRCUIT BOARD (PARTS SIDE)

Fig. 81

1. 11V power voltage adjustment
1) Connect a DC power supply to the emitter of Q006.
2) Connect a VTVM to PG005 pin ①. (Connect a resistor
3) Set the DC output to 14V.
4) Adjust R034 (11V POWER VOLTAGE) so that the of the VTVM is 11±0.1V.

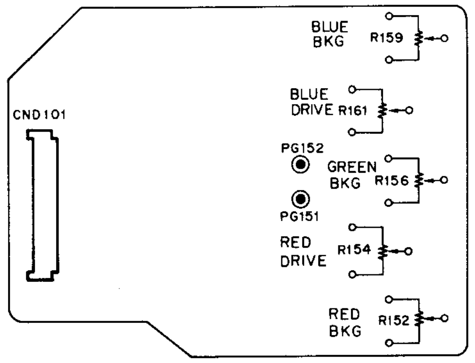
2. Active filter adjustment
1) Connect a DC power supply to the emitter of Q006.
2) Connect a VTVM to the TP003.
3) Set the output of the DC power supply to 11V.
4) Adjust R023 (ACTIVE FILTER) so that the reading of the VTVM is 3.35±.02V.

Colour Monitor Circuit Adjustment (Colour monitor PC board)


S101
VR103
V.HOLD
VR104
COLOUR
VR105
BRIGHTNESS

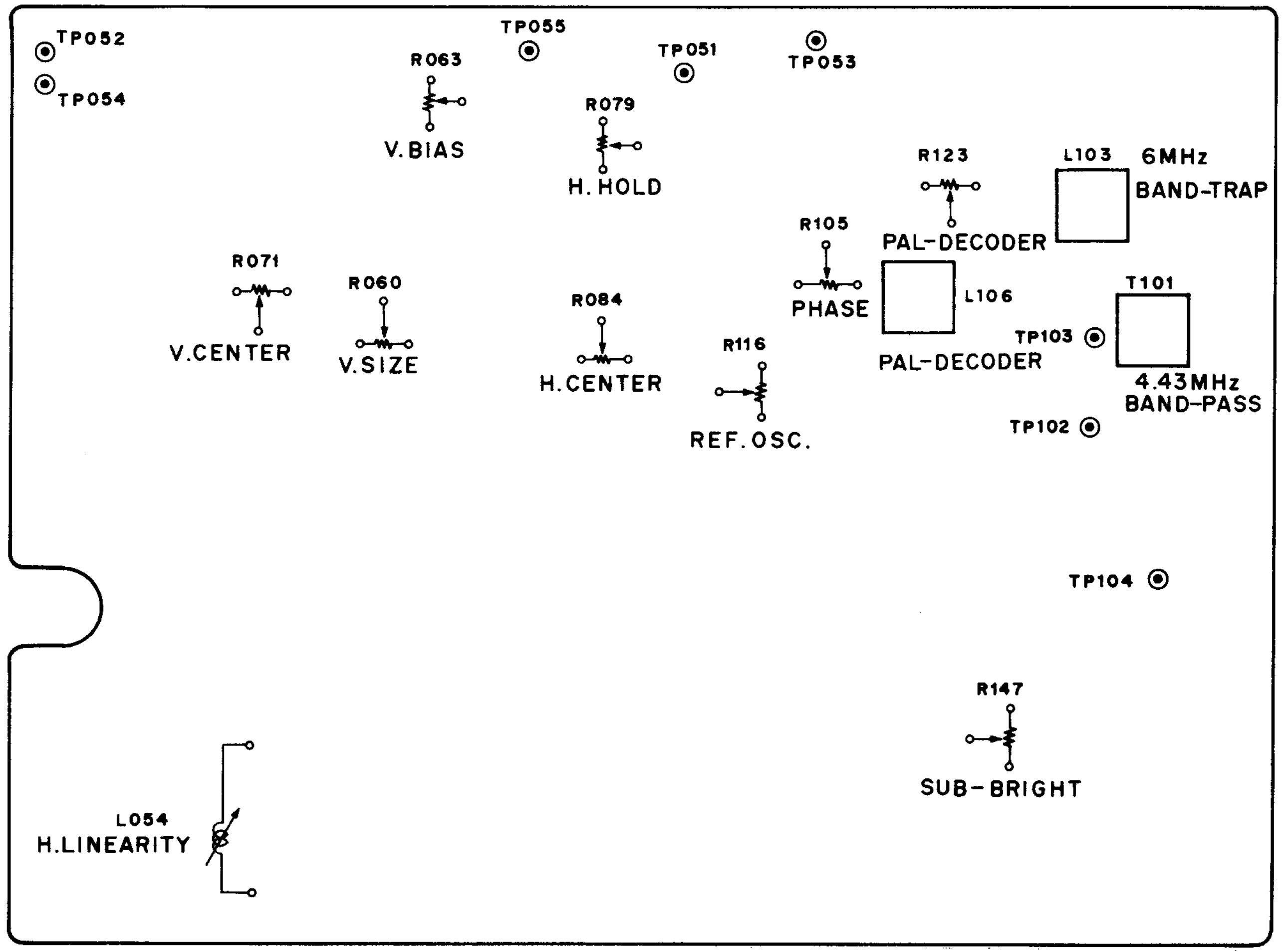
MONITOR SELECTOR CIRCUIT BOARD (PARTS SIDE)

Fig. 82


BLUE BKG R159
CND101
BLUE DRIVE R161
PG152
GREEN BKG R156
PG151
RED DRIVE R154
RED BKG R152

CPT SOCKET CIRCUIT BOARD (PARTS SIDE)

Fig. 83


TP052
TP054
R063
V.BIAS
TP055
R079
H. HOLD
TP051
TP053
R123
PAL-DECODER
L103 6MHz BAND-TRAP
R105
PHASE
L106
PAL-DECODER
T101
TP103
4.43MHz BAND-PASS
TP102
R071
V.CENTER
R060
V.SIZE
R084
H.CENTER
R116
REF.OSC.
TP104
R147
SUB-BRIGHT
L054
H.LINEARITY

COLOUR MONITOR CIRCUIT BOARD (PARTS SIDE)

Fig. 84

1. Purity adjustment/Convergence adjustment

1-1. Preparation
1) Install the deflection yoke to the CPT and compress the deflection yoke against the CPT funnel surface. (The purity/ convergence magnets are made in one body with the deflection yoke.) Refer to Fig. 85.

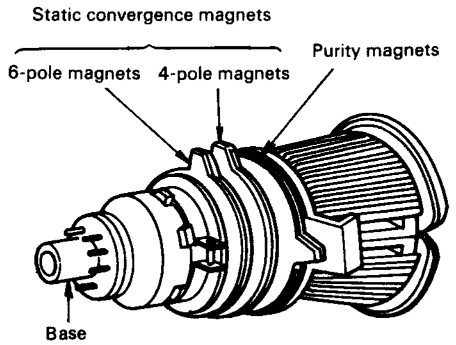

Static convergence magnets
Purity magnets
6-pole magnets
4-pole magnets
Base

Fig. 85

2) Install the CPT socket PC board to the CPT. Check that the CPT GND connector is inserted at that time.
3) Set the CPT facing south or north and demagnetize the CPT surface using a demagnetized coil.
4) Arrange 2 knobs of the purity magnets horizontally and 4 knobs of the 4-pole/6-pole magnets vertically. Arrange the purity magnet knobs of the CPT funnel side so they are not parallel at that time. Refer to Fig. 86.

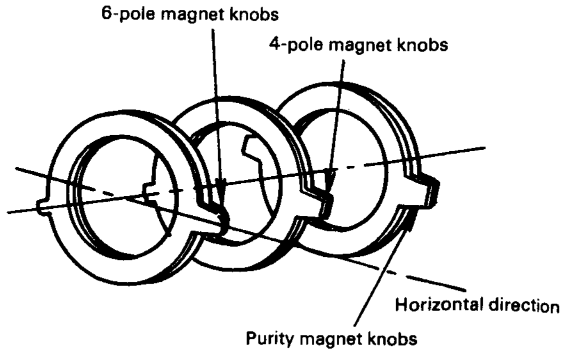

6-pole magnet knobs
4-pole magnet knobs
Horizontal direction
Purity magnet knobs

Fig. 86

5) Set the power to ON and apply heat-run for 10 minutes or more. Connect the pattern generator to the video input jack, input the cross-hatch signal and turn VR001 (FOCUS) to set it so that the focus at the center of the screen is best.

1-2. Purity adjustment

1) Ground the input side (Base) of the green output transistor Q002 to CND001 pin ⑤ (GND) using a shorting clip to obtain a magenta color.
2) Draw back the deflection yoke approx. 10 mm for the CPT funnel surface and check that the state shown in Fig. 87 is obtained.
When the vertical magenta band drifts to the left/right from the center of the screen, adjust the purity magnets so that it is positioned at the center.

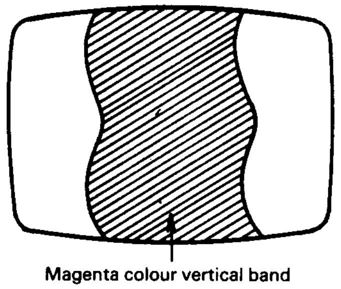


Fig. 87

3) Bring the deflection yoke a little away from the CPT funnel surface (approx. 5 mm), and adjust the purity magnets so that the sizes of color uneveness of the left and right of the screen are approximately equal.

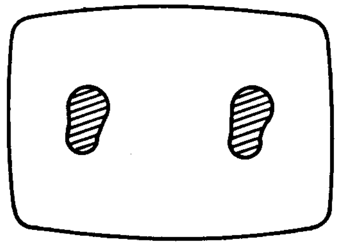


Fig. 88

4) Adjust the tilt of the deflection yoke so that the horizontal lines at the center of the cross-hatch pattern are parallel, tighten the deflection yoke fixing screw to fix it.

Note: Do not tighten the screw too much because it may damage the CPT neck.

5) Remove the shorting clip connected in item 1) above and check that the whole screen is white.
6) Ground the input sides (Bases) of the blue output transistor Q003 and green output transistor Q002 to CND001 pin ⑤ (GND) using shorting clips to obtain a single red color and check that the whole screen is red.

1-3. Static convergence adjustment

1) Grond the input side (Base) of the green output transistor Q002 to CND001 pin ⑤ (GND) using a shorting clip to obtain a red/blue cross-hatch pattern.
2) Gradually open 2 knobs of the 4-pole magnet while watching the cross-hatch pattern at the center of the screen to match the red and blue vertical lines. Next, turn the magnet while keeping these 2 knobs open to match the red and blue horizontal lines.
3) Remove the shorting clip connected in item 1) above to obtain a red/blue/green cross-hatch pattern.
4) Gradually open 2 knobs of the 6-pole magnet while watching the cross-hatch pattern at the center of the screen to match the vertical green lines at the center of the screen with the vertical blue/red lines. Then, turn the magnets while keeping these 2 knobs open to match the green horizontal line to the blue and red horizontal lines.

2. White balance adjustment

1) Apply a 100% white signal to the video input jack, and set the controls, etc. to the positions as follows.
PICTURE CONTROL (VR101):
Fully downward
SUB-BRIGHTNESS CONTROL (R147):
Fully clockwise
SCREEN CONTROL (VR052):
Fully counterclockwise
DRIVE CONTROL (red R154, blue R161):
Center
BKG CONTROL (red R152, green R156, blue R159):
Positioned with the arrow mark of the knob turned 45° back from the fully counterclockwise position.
2) Connect TP052 and TP054 (GND) using a shorting clip. (Obtain a single horizontal line.)
3) Gradually turn VR052 (SCREEN) clockwise and stop it at the position where either of the colours can be seen dimly. When no colour is seen, turn VR052 (SCREEN) fully clockwise.
4) Gradually turn R147 (SUB-BRIGHTNESS) counterclockwise and stop it at the position where either of the clours can be seen dimly.
5) Turn the BKG control corresponding to the colour not seen counterclockwise to obtain a single white horizontal line.
6) Remove the clip inserted in item 2), turn R147 (SUB-BRIGHTNESS) clockwise to set so that the picture is seen dimly and check that low brightness white balance is obtained. If it is not, obtain white balance using the BKG control.
7) Turn VR105 (BRIGHTNESS) fully clcokwise, slide VR101 (PICTURE) fully upward and adjust high brightness white balance using the red/blue drive controls.
8) Turn VR105 (BRIGHTNESS) fully counterclockwise, and slide VR101 (PICTURE) fully downward, and check that low brightness white balance is obtained. When it is not, adjust as shown in item 7) and check low brightness white balance again.
9) Finally slide VR101 (PICTURE) fully upward., turn VR104 (COLOUR) and VR105 (BRIGHTNESS) to fully counterclockwise, and adjust R147 (SUB-BRIGHTNESS) so that the black level on the screen is best.

3. Chrominance band pass adjustment

1) Connect a video sweep generator to video input jack, and input a video sweep signal (0.5 ~ 7.0 MHz).
2) Connect an oscilloscope to TP103.
3) Turn L103 (6.0 MHz BAND TRAP) fully clockwise, gradually turn it counterclockwise to adjust so that the 6.0 MHz level is min.
4) Turn T101 (4.43 MHz BAND PASS) fully clockwise, gradually turn it counterclockwise to adjust so that the 4.43 MHz level is max. Refer to Fig. 89.

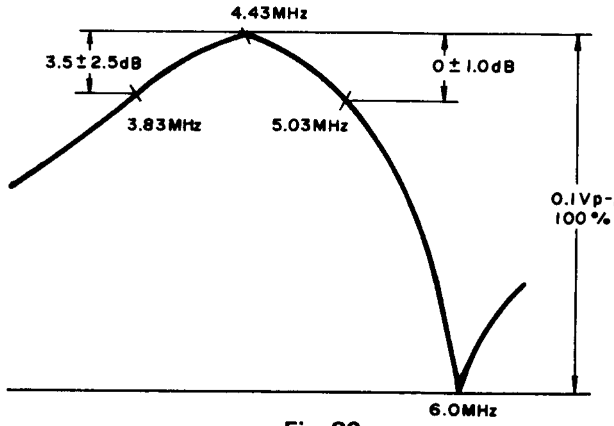


Fig. 89

4. Colour adjustment

1) Primary adjustment of colour bar generator or test card.

Step	Alignment	Adjustment	Adjust	Result	Note	Oscillogram
1	Reference oscillator		R116	Obtain colour synchronization.	Connect TP101 and TP103 Ground TP102 through a resistor 22kΩ.	—
2	PAL decoder	CND101 Pin ⑥	R123 L106 respectively	Min. amplitude	only with colour-bar generator – "PAL OFF"	Refer to the next page on alignment with the electronic test card.

2) Adjustment with the electronic test card.

Step	Adjustment	Adjust	Result
1	PAL decoder	L106	Min. Hannover line on part cyan
		R123	Min. Hannover line on part +(R–Y), ±(B–Y)
2	Phase	R105	Part +(R – Y) colourless Part ±(B – Y) colourless

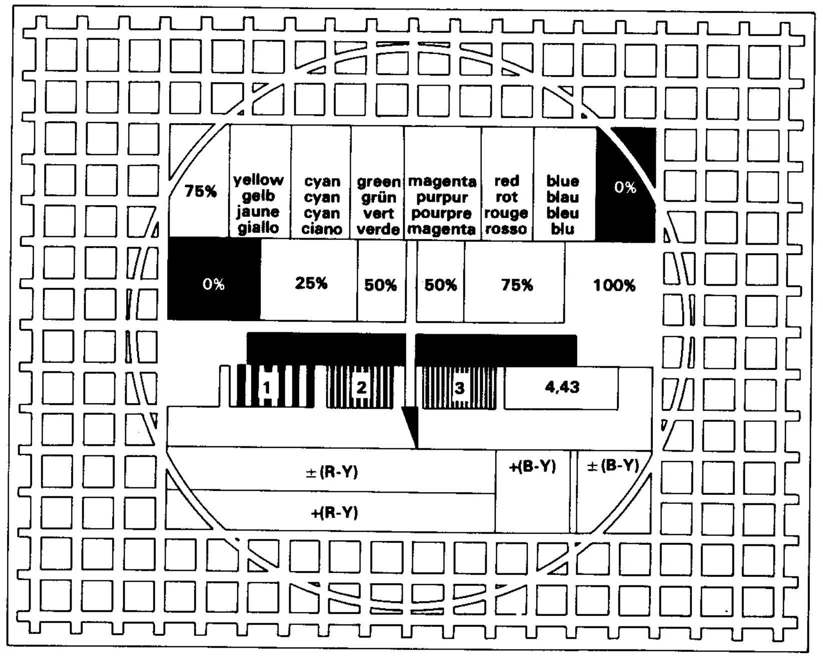


Fig. 90

5. Vertical bias adjustment

1) Connect a VTVM to PG005 pin ④.
2) Connect a DC power supply to PG002 pin ⑦ and apply 12 ~ 13V.
3) Connect a pattern generator to PG002 pin ③ and input a cross-hatch signal.
4) Roughly adjust VR051 (FOCUS) so that focusing is improved.
5) Adjust R060 (VERTICAL SIZE) so that the cross-hatch pattern is roughly square.
6) Adjust R063 (VERTICAL BIAS) so that the reading of the VTVM is 5.5±0.2V.

6. Horizontal hold adjustment

1) Insert a 0.1μF mylar capacitor between TP051 (Collector of Q051) and TP053 (GND).
2) Connect a pattern generator to PG002 pin ⑦ and apply 12 ± 13V.
3) Connect a pattern generator to PG002 pin ③ and input a cross-hatch signal.
4) Adjust R079 (HORIZONTAL HOLD) to stop the picture fluctuating. Adjust VR002 (VERTICAL HOLD) when the vertical hold is not correct.
5) Remove the capacitor connected in 1) and check synchronization.

7. Focus adjustment

1) Receive a broadcast or connect a pattern generator to the video input jack, and apply a colour bar signal.
2) Adjust VR051 (FOCUS) so that the screen is bright and focus is best all over the screen.

8. Vertical size adjustment/Horizontal linearity adjustment/Picture center adjustment

1) Set VR105 (BRIGHTNESS) to the click position and slide VR101 (PICTURE) fully downward.
2) Receive a broadcast or connect a pattern generator to the video input jack, and apply a cross-hatch signal.
3) Adjust R060 (VERTICAL SIZE) and L054 (HORIZONTAL LINEARITY) so that the vercial hold and linearity are best. When titles cannot be seen or there is loss of raster at that time, adjust R071 (VERTICAL CENTER) and R084 (HORIZONTAL CENTER) so that they are normal.

Note: Turn VR105 (BRIGHTNESS) fully clockwise and slide VR101 (PICTURE) fully upward when adjusting for titles which cannot be seen.
Turn VR105 (BRIGHTNESS) fully counterclockwise and slide VR101 (PICTURE) fully downward when adjusting for loss of raster.

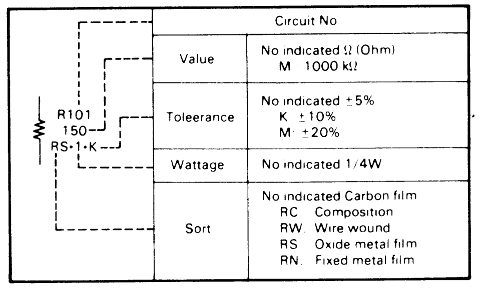
9. Degaussing

When objects using magnets (toy cars operated with batteries, speakers, etc.) are brought near to the colour monitor or when this unit is moved, colour unevenness may appear on the screen (the colour may partially change).
In this case, plug the AC cord into degaussing socket. If it is still not corrected, unplug the cord and leave it for approx. 10 minutes then plug it in once again.

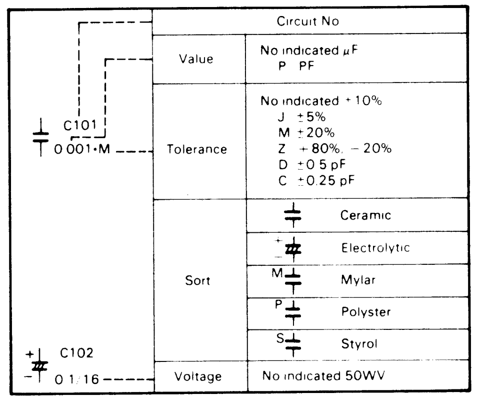
DIAGRAMS

Note:

1. Voltage measured at base of chassis with minimum volume control and no signal.
2. Nomenclature of Resistors and Capacitors.



	Circuit No	
R101	Value	No indicated Ω (Ohm) M 1000 kΩ
150	Toleerance	No indicated ±5% K ±10% M ±20%
RS·1·K	Wattage	No indicated 1/4W
	Sort	No indicated Carbon film RC Composition RW Wire wound RS Oxide metal film RN Fixed metal film



	Circuit No	
C101	Value	No indicated μF P PF
0 001·M	Tolerance	No indicated ±10% J ±5% M ±20% Z +80%, −20% D ±0 5 pF C ±0.25 pF
	Sort	Ceramic Electrolytic Mylar Polyster Styrol
C102 0 1/16	Voltage	No indicated 50WV

3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.

Cautions on use of MOS IC

1. The MOS IC is inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during their storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
2. High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
3. The human body, clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so a workers should be grounded.
4. Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

SEMI

m for shipment.
circuits between
remove ICs from
moving ICs from
h is likely to be
rting them into

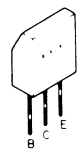
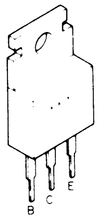
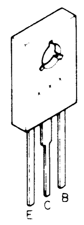
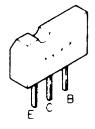
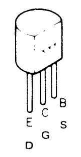
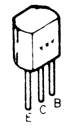
dering caused by
e sure to ground
w voltage solder-

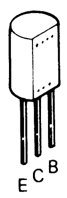
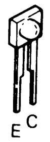
nthetic fibres or
everal thousands
tion, so a work-

s such as oscillo-

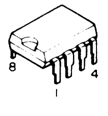
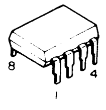
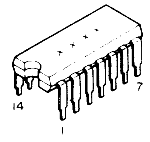
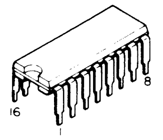
SEMICONDUCTOR CONFIGURATION LIST

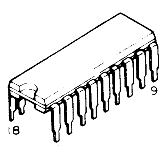
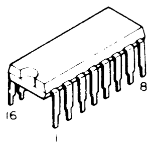
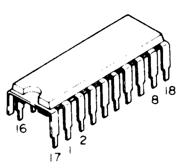
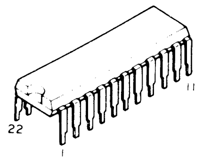
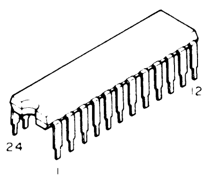
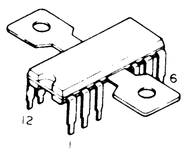
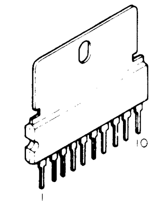
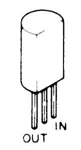
Transistor

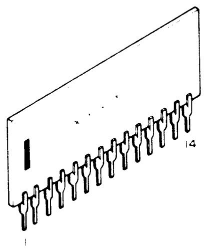
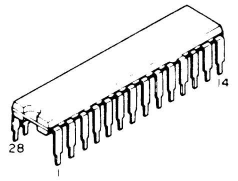
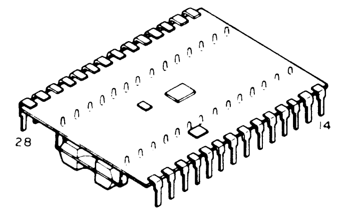
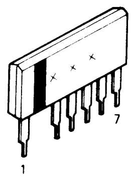
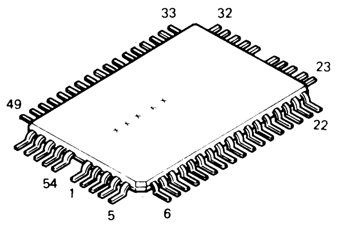
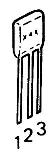
1	2	3	4	5	6
					
2SA673 2SA844	2SC1061 2SC2373 2SB857	2SC1162	2SC2021 2SC1652 2SA937	2SA673 2SA844 2SA952 2SC458 2SC945 2SC1213 2SC1214 2SC1740 2SK117 2SC1890	2SC2603

7	8
	
2SD468	PN150

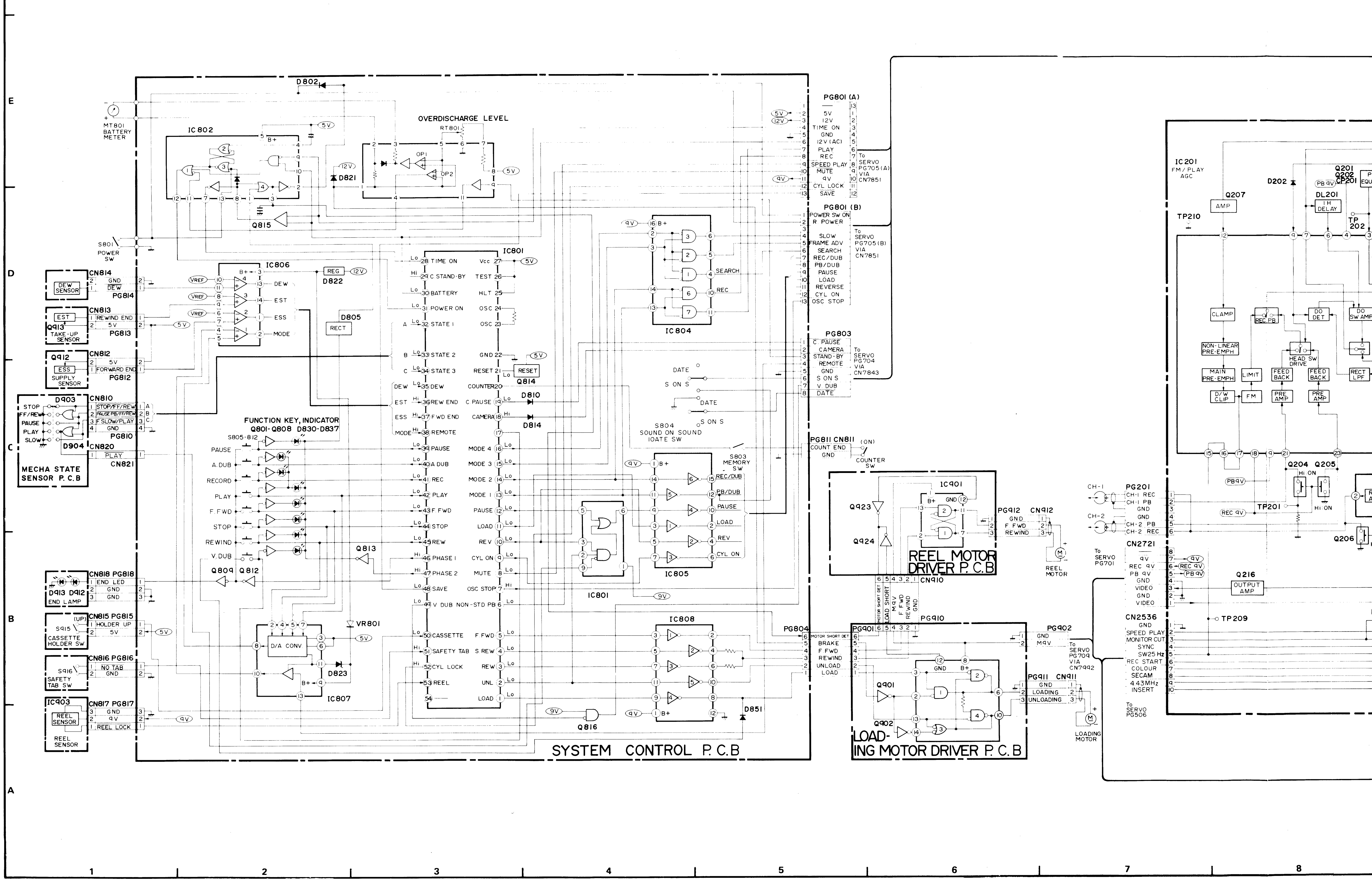
IC

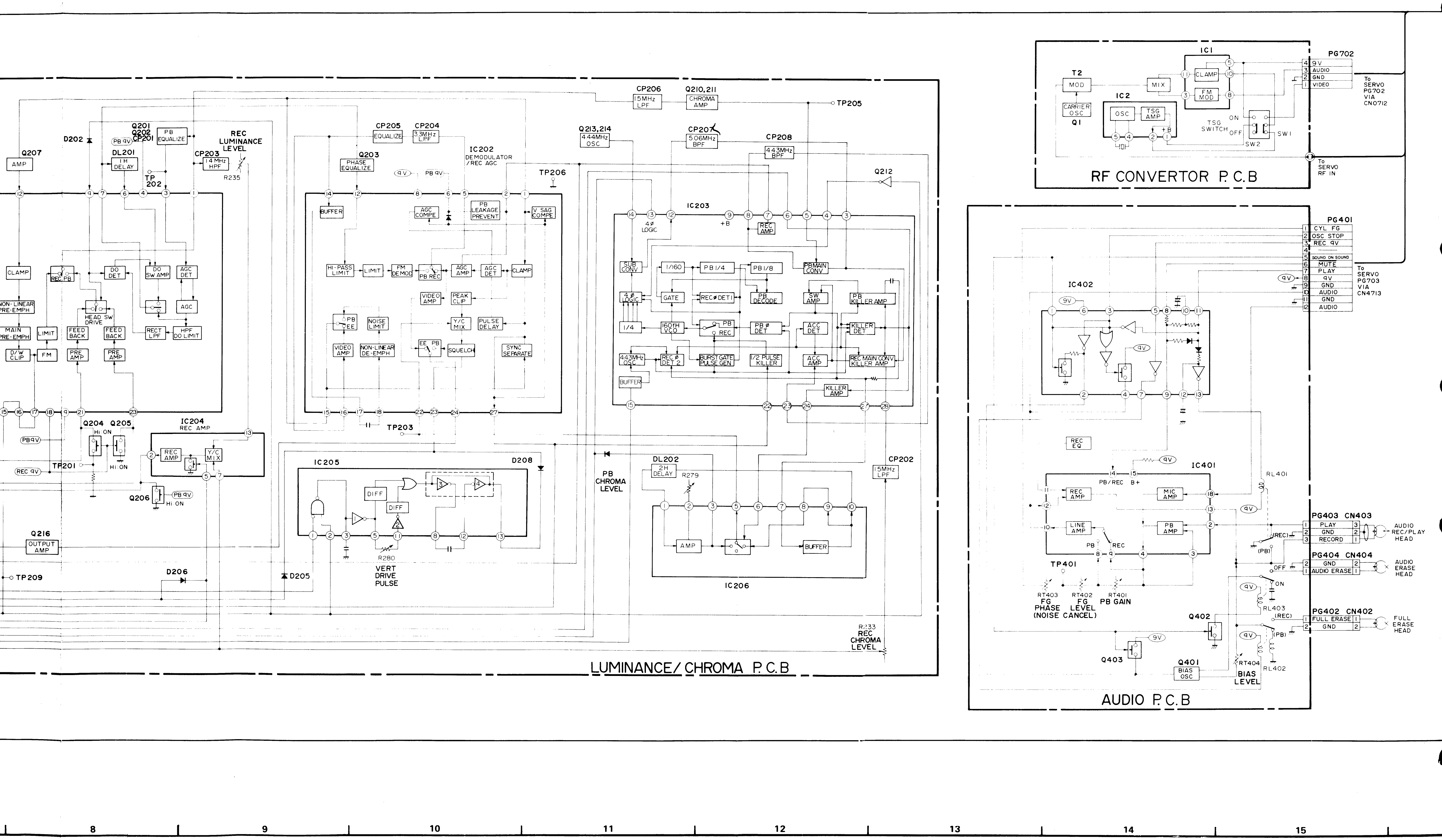
1	2	3	4
			
μPC1458	NJM4558	μPD4001 MB4204 μPD4011	μPD4555 MSL9372 μPD4049

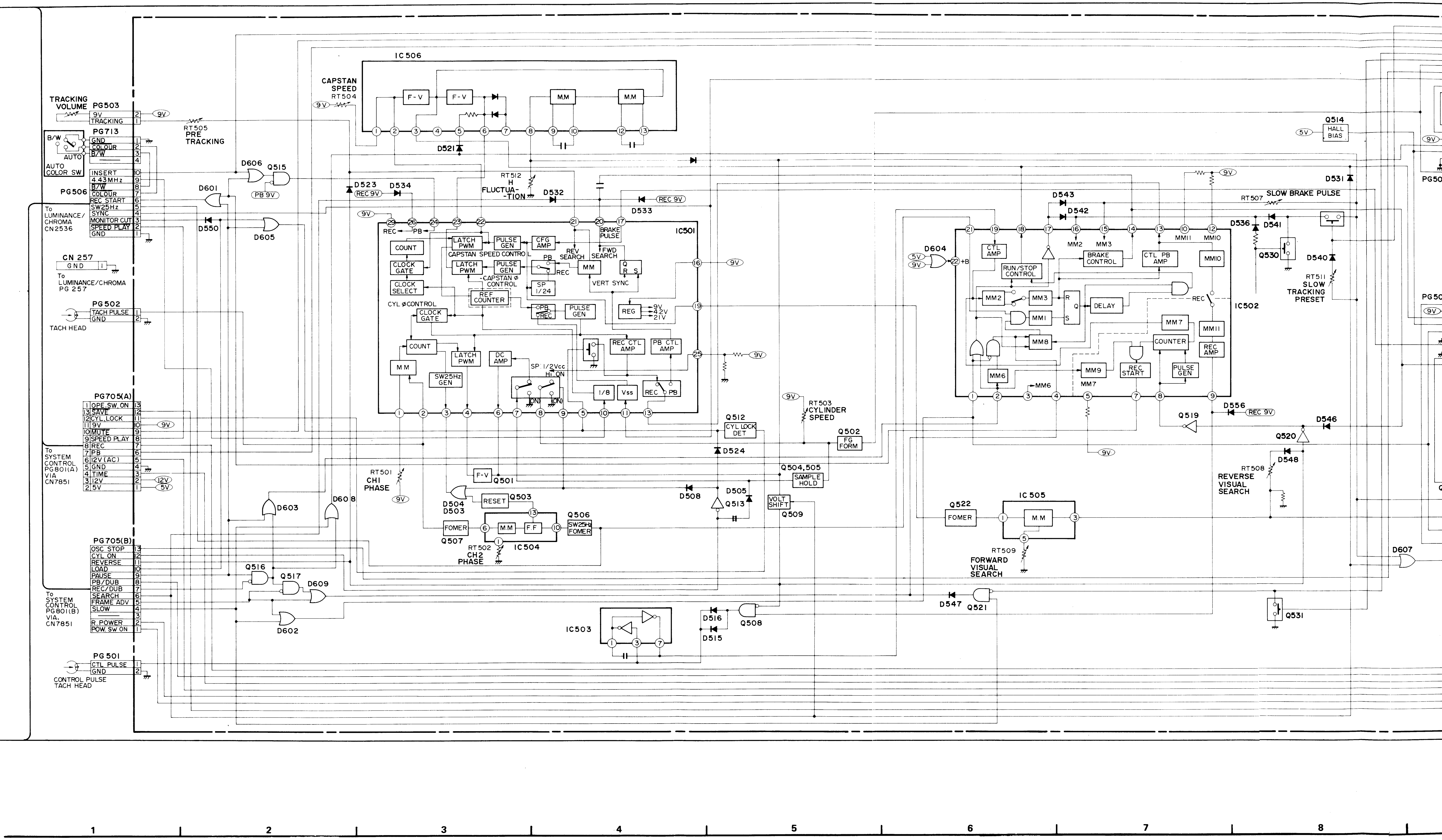
	6	7	8
			
HA11713	BA5102	HA11714 HA11235	BA847
		11	12
			
μPC1363	HA11715	BA6107	TA78Lxxx

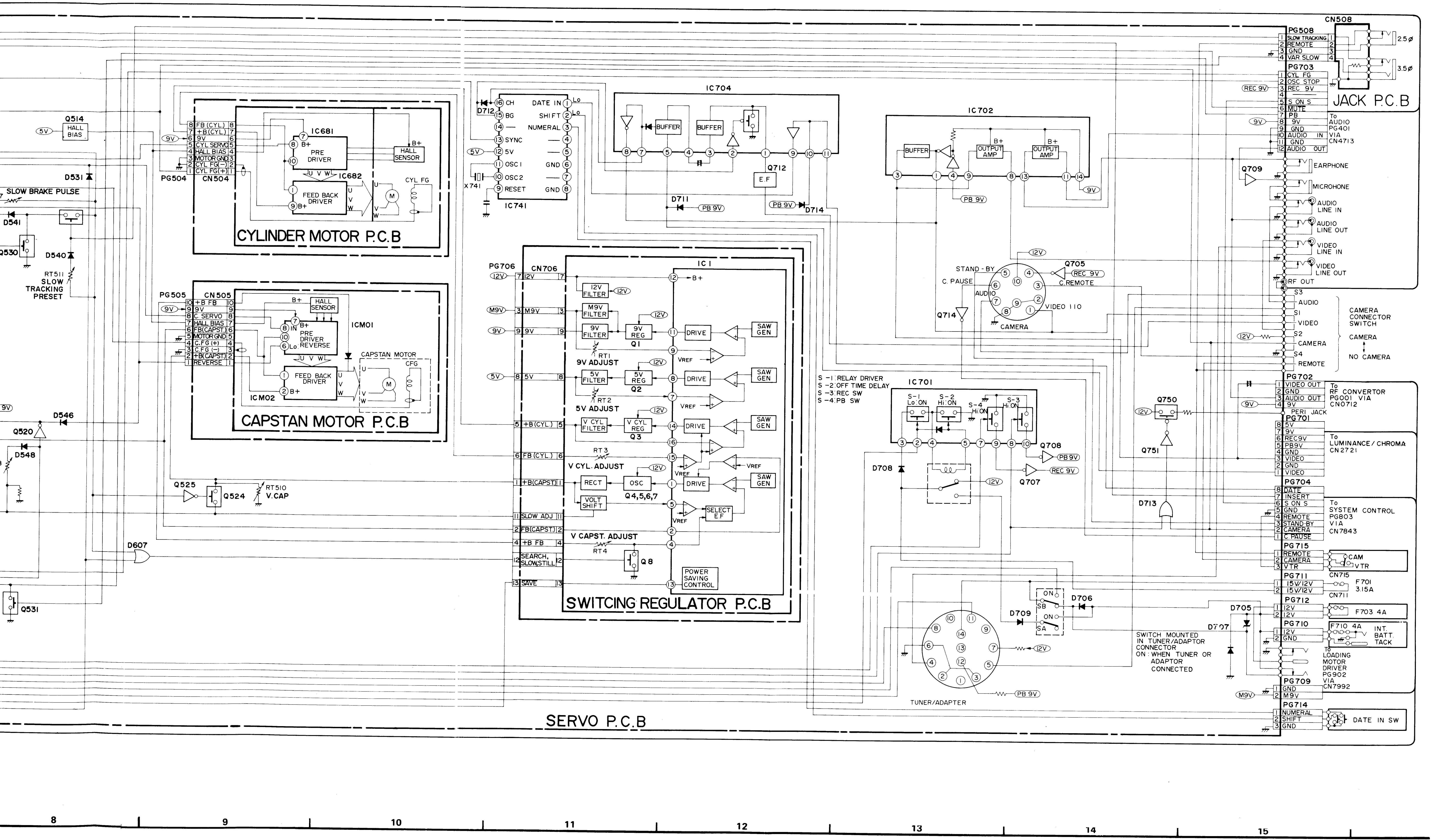
13	14	
		
TA43xx	HA11711 HA11727 HD38757 μPC1352 TC4514	HT42xx
16		
		
HA1406	HD44820A48	DM101

BLOCK DIAGRAM (VIDEO DECK BLOCK)

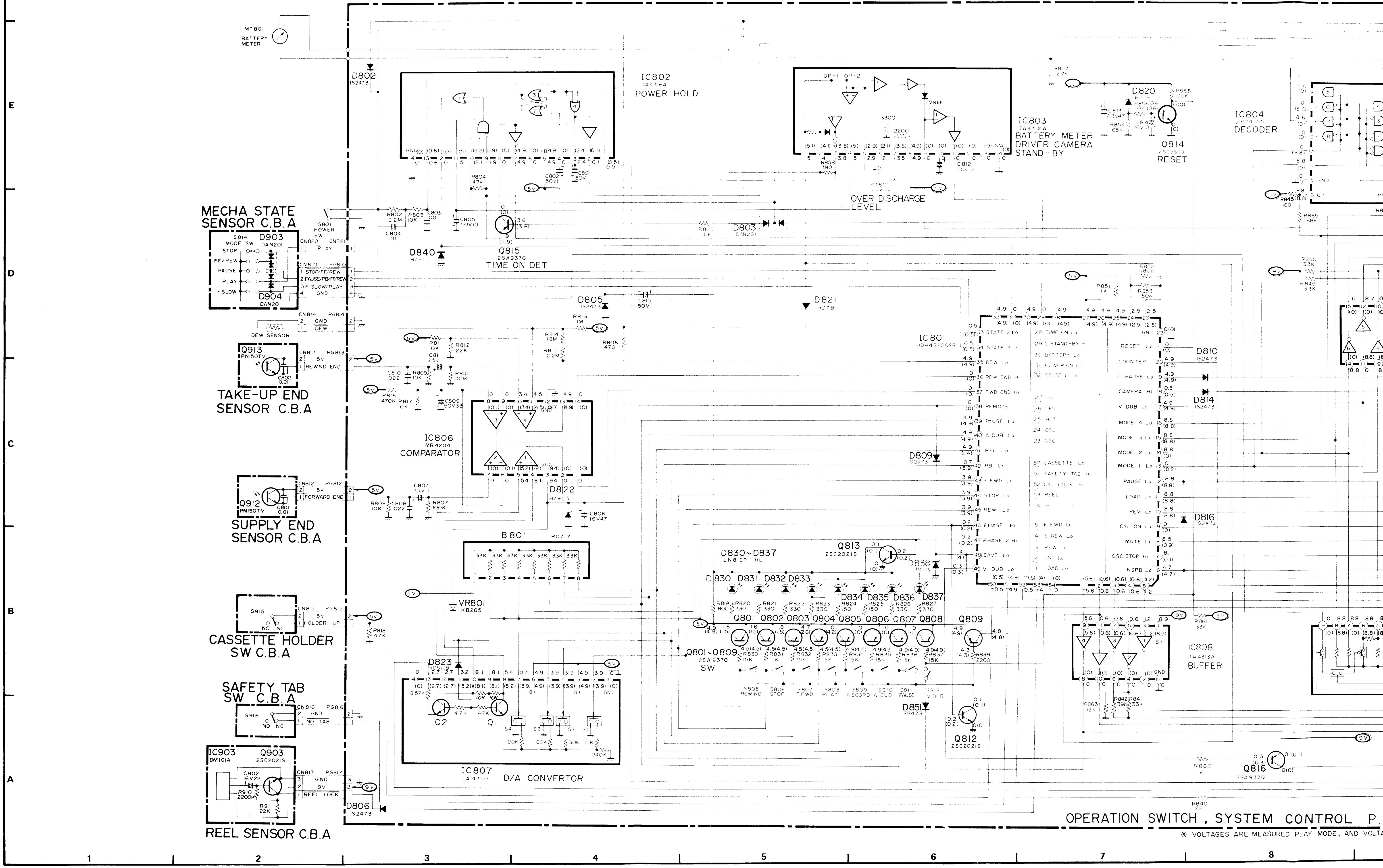

MT801 BATTERY METER
IC802
D802
OVERDISCHARGE LEVEL
RT801
OP1
OP2
D821
Q815
S801 POWER SW
CN814
DEW SENSOR
PG814
CN813
EST
Q913 TAKE-UP SENSOR
PG813
CN812
Q912
ESS
SUPPLY SENSOR
PG812
CN810
D903
STOP
FF/REW
PAUSE
PLAY
SLOW
D904
CN820
PLAY
CN821
MECHA STATE SENSOR P.C.B
IC806
REG
D822
D805
RECT
IC801
TIME ON
C STAND-BY
BATTERY
POWER ON
STATE 1
STATE 2
STATE 3
DEW
REW END
FWD END
REMOTE
RESET
Q814
D810
D814
IC804
SEARCH
REC
FUNCTION KEY, INDICATOR
Q801-Q808 D830-D837
S805-812
PAUSE
A.DUB
RECORD
PLAY
F.FWD
STOP
REWIND
V.DUB
Q813
Q809
Q812
IC805
REC/DUB
PB/DUB
PAUSE
LOAD
REV
CYL ON
S804 SOUND ON SOUND / DATE SW
S803 MEMORY SW
DATE
S ON S
CN818 PG818
END LED
D913 D912
END LAMP
CN815 PG815
HOLDER UP
S915
CASSETTE HOLDER SW
CN816 PG816
NO TAB
S916
SAFETY TAB SW
IC903
CN817 PG817
REEL SENSOR
REEL LOCK
D/A CONV
IC807
D823
VR801
IC808
D851
Q816
SYSTEM CONTROL P.C.B
PG801 (A)
5V
12V
TIME ON
GND
12V (AC)
PLAY
REC
SPEED PLAY
MUTE
9V
CYL LOCK
SAVE
To SERVO PG705(A) VIA CN7851
PG801 (B)
POWER SW ON
R POWER
SLOW
FRAME ADV
SEARCH
REC/DUB
PB/DUB
PAUSE
LOAD
REVERSE
CYL ON
OSC STOP
To SERVO PG705(B) VIA CN7851
PG803
C PAUSE
CAMERA
STAND-BY
REMOTE
GND
S ON S
V DUB
DATE
To SERVO PG704 VIA CN7843
PG811 CN811
COUNT END
COUNTER SW
IC901
Q923
Q924
REEL MOTOR DRIVER P.C.B
PG912 CN912
F FWD
REWIND
REEL MOTOR
CN910
PG910
PG804
MOTOR SHORT DET
BRAKE
F FWD
REWIND
UNLOAD
LOAD
PG901
Q901
Q902
LOADING MOTOR DRIVER P.C.B
PG902
To SERVO PG709 VIA CN7992
PG911 CN911
LOADING
UNLOADING
LOADING MOTOR
CH-1
CH-2
PG201
CH-1 REC
CH-1 PB
CH-2 PB
CH-2 REC
To SERVO PG701
CN2721
REC 9V
PB 9V
VIDEO
Q216
OUTPUT AMP
CN2536
SPEED PLAY
MONITOR CUT
SYNC
SW25 Hz
REC START
COLOUR
SECAM
4.43MHz
INSERT
To SERVO PG506
TP209
IC201 FM/PLAY AGC
TP210
Q207
AMP
D202
Q201
Q202
CP201
DL201
1H DELAY
TP202
CLAMP
REC PB
DO DET
DO SW AMP
NON-LINEAR PRE-EMPH
MAIN PRE-EMPH
LIMIT
HEAD SW DRIVE
FEED BACK
RECT LPF
D/W CLIP
FM
PRE AMP
Q204
Q205
Hi ON
TP201
Q206
1
2
3
4
5
6
7
8
A
B
C
D
E


LUMINANCE/ CHROMA P.C.B
RF CONVERTOR P.C.B
AUDIO P.C.B
Q207
AMP
D202
Q201
Q202
CP201
PB EQUALIZE
DL201
1H DELAY
CP203
14MHz HPF
TP 202
REC LUMINANCE LEVEL
R235
CLAMP
REC PB
DO DET
DO SW AMP
AGC DET
AGC
HEAD SW DRIVE
NON-LINEAR PRE-EMPH
MAIN PRE-EMPH
LIMIT
FEED BACK
RECT LPF
HPF DO LIMIT
D/W CLIP
FM
PRE AMP
Q204
Q205
Hi ON
PB 9V
REC 9V
TP201
Q206
Q216
OUTPUT AMP
TP209
D206
IC204
REC AMP
Y/C MIX
CP205
EQUALIZE
CP204
3.3MHz LPF
Q203
PHASE EQUALIZE
IC202
DEMODULATOR /REC AGC
TP206
BUFFER
AGC COMPE
PB LEAKAGE PREVENT
V SAG COMPE
HI-PASS LIMIT
FM DEMOD
PB REC
AGC AMP
AGC DET
VIDEO AMP
PEAK CLIP
PB EE
NOISE LIMIT
Y/C MIX
PULSE DELAY
NON-LINEAR DE-EMPH
SQUELCH
SYNC SEPARATE
TP203
IC205
DIFF
D208
D205
R280
VERT DRIVE PULSE
CP206
1.5MHz LPF
Q210,211
CHROMA AMP
TP205
Q213,214
4.44MHz OSC
CP207
5.06MHz BPF
CP208
4.43MHz BPF
Q212
IC203
4Ø LOGIC
+B
REC AMP
SUB CONV
1/160
PB 1/4
PB 1/8
PB MAIN CONV
GATE
REC Ø DET 1
PB DECODE
SW AMP
PB KILLER AMP
1/4
160fH VCO
PB REC
PB Ø DET
ACC DET
KILLER DET
4.43MHz OSC
REC Ø DET 2
BURST GATE PULSE GEN
1/2 PULSE KILLER
ACC AMP
REC MAIN CONV KILLER AMP
BUFFER
KILLER AMP
PB CHROMA LEVEL
DL202
2H DELAY
R279
IC206
AMP
BUFFER
CP202
1.5MHz LPF
R233 REC CHROMA LEVEL
IC1
T2
MOD
MIX
CLAMP
FM MOD
CARRIER OSC
Q1
IC2
OSC
TSG AMP
TSG SWITCH
ON
OFF
SW1
SW2
PG702
9V
AUDIO
GND
VIDEO
To SERVO PG702 VIA CN0712
To SERVO RF IN
PG401
CYL FG
OSC STOP
REC 9V
SOUND ON SOUND
MUTE
PLAY
9V
GND
AUDIO
GND
AUDIO
To SERVO PG703 VIA CN4713
IC402
REC EQ
IC401
PB/REC
B+
REC AMP
MIC AMP
LINE AMP
PB AMP
PB
REC
RL401
TP401
RT403 FG PHASE (NOISE CANCEL)
RT402 FG LEVEL
RT401 PB GAIN
PG403 CN403
PLAY
GND
RECORD
AUDIO REC/PLAY HEAD
(REC)
(PB)
PG404 CN404
GND
AUDIO ERASE
AUDIO ERASE HEAD
OFF
ON
RL403
PG402 CN402
FULL ERASE
GND
FULL ERASE HEAD
Q402
Q403
Q401
BIAS OSC
RT404
BIAS LEVEL
RL402
8
9
10
11
12
13
14
15


TRACKING VOLUME
PG503
9V
TRACKING
RT505 PRE TRACKING
PG713
B/W
AUTO
AUTO COLOR SW
GND
COLOUR
B/W
PG506
INSERT
4.43MHz
B/W
COLOUR
REC START
SW25Hz
SYNC
MONITOR CUT
SPEED PLAY
GND
To LUMINANCE/CHROMA CN2536
CN 257
GND
To LUMINANCE/CHROMA PG 257
PG502
TACH PULSE
GND
TACH HEAD
PG705(A)
OPE.SW.ON
SAVE
CYL.LOCK
9V
MUTE
SPEED PLAY
REC
PB
12V (AC)
GND
TIME
12V
5V
To SYSTEM CONTROL PG801(A) VIA CN7851
PG705(B)
OSC STOP
CYL ON
REVERSE
LOAD
PAUSE
PB/DUB
REC/DUB
SEARCH
FRAME ADV
SLOW
R.POWER
POW. SW ON
To SYSTEM CONTROL PG801(B) VIA CN7851
PG 501
CTL PULSE
GND
CONTROL PULSE TACH HEAD
D606
Q515
PB 9V
D601
D550
D605
D603
D608
Q516
Q517
D609
D602
IC506
CAPSTAN SPEED RT504
F-V
M.M
D521
RT512 H FLUCTUA-TION
D532
D523
D534
REC 9V
D533
IC501
REC
PB
COUNT
CLOCK GATE
CLOCK SELECT
CYL φ CONTROL
LATCH PWM
CAPSTAN SPEED CONTROL
PULSE GEN
CFG AMP
REV SEARCH
FWD SEARCH
BRAKE PULSE
CAPSTAN φ CONTROL
REF COUNTER
SP 1/24
MM
Q R S
VERT SYNC
REG
9V 4.2V 21V
SW25Hz GEN
DC AMP
SP 1/2Vcc
Hi: ON
(ON)
REC CTL AMP
PB CTL AMP
1/8
Vss
RT501 CH1 PHASE
F-V
Q501
D504 D503
RESET
Q503
FOMER
Q507
M.M
F.F
IC504
Q506
SW25Hz FOMER
RT502 CH2 PHASE
Q512
CYL LOCK DET
D524
RT503 CYLINDER SPEED
Q502
FG FORM
Q504,505
SAMPLE HOLD
D508
D505
Q513
VOLT SHIFT
Q509
IC503
D516
D515
Q508
Q514
HALL BIAS
5V
D604
+B
IC502
CTL AMP
RUN/STOP CONTROL
D543
D542
MM2
MM3
BRAKE CONTROL
CTL PB AMP
MM11
MM10
MM1
R Q S
DELAY
MM7
MM8
COUNTER
MM6
MM9
REC START
PULSE GEN
REC AMP
D556
Q519
D546
Q520
D548
RT508 REVERSE VISUAL SEARCH
D536
D541
Q530
D540
RT511 SLOW TRACKING PRESET
RT507 SLOW BRAKE PULSE
D531
Q522
FOMER
IC505
RT509 FORWARD VISUAL SEARCH
D547
Q521
Q531
D607
PG50
1
2
3
4
5
6
7
8

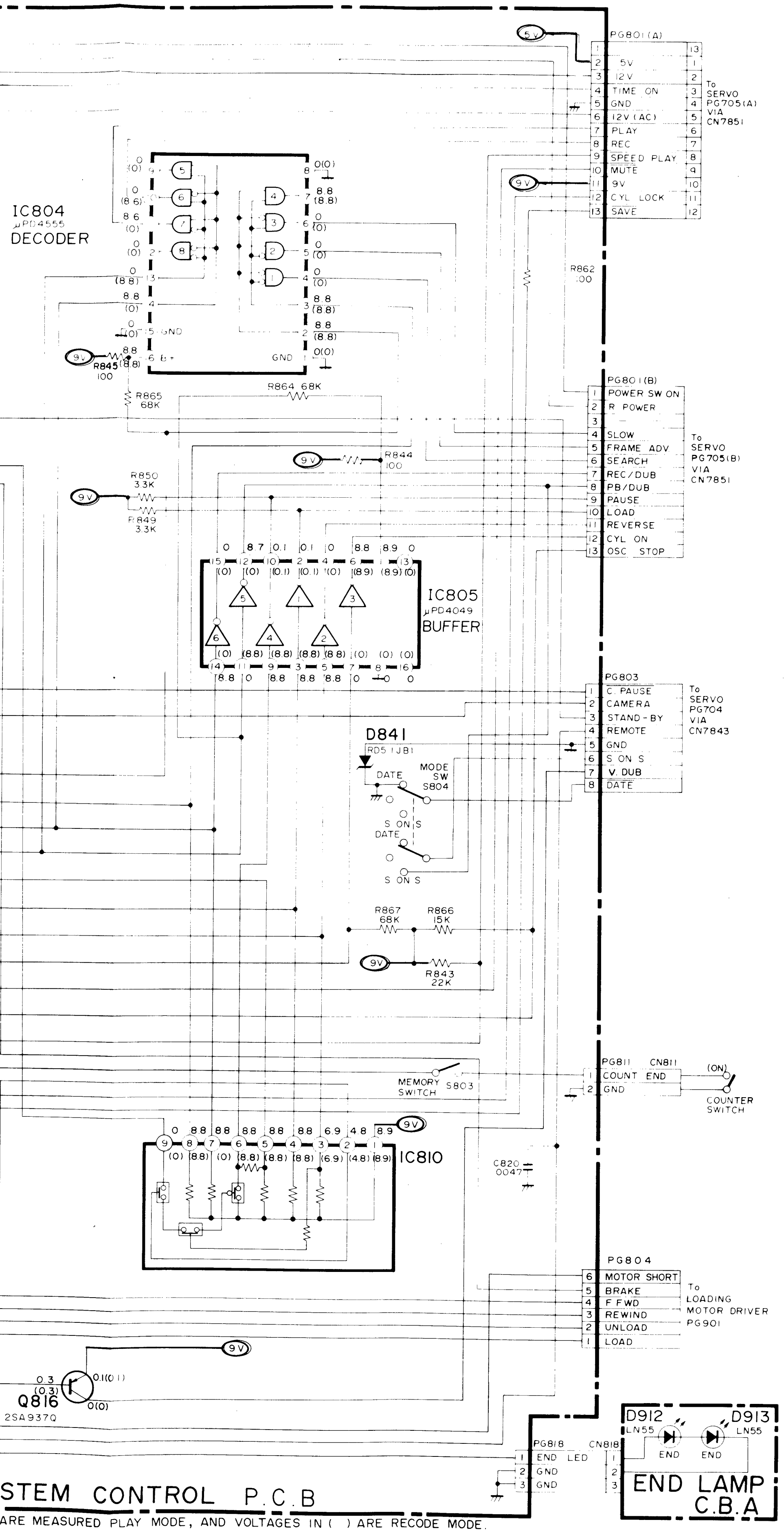

SERVO P.C.B
CYLINDER MOTOR P.C.B
CAPSTAN MOTOR P.C.B
SWITCING REGULATOR P.C.B
JACK P.C.B
Q514
HALL BIAS
5V
9V
D531
SLOW BRAKE PULSE
D541
Q530
D540
RT511 SLOW TRACKING PRESET
PG504
CN504
8 FB (CYL) 8
7 +B (CYL) 7
6 9V 6
5 CYL SERVO 5
4 HALL BIAS 4
3 MOTOR GND 3
2 CYL FG(−) 2
1 CYL FG(+) 1
IC681
PRE DRIVER
B+
U V W
IC682
FEED BACK DRIVER
HALL SENSOR
CYL FG
M
PG505
CN505
10 +B FB 10
9 9V 9
8 C. SERVO 8
7 HALL BIAS 7
6 FB(CAPST.) 6
5 MOTOR GND 5
4 C.FG (+) 4
3 C.FG (−) 3
2 +B(CAPST.) 2
1 REVERSE 1
ICM01
PRE DRIVER REVERSE
IN
Lo
ICM02
FEED BACK DRIVER
CAPSTAN MOTOR
CFG
D546
Q520
D548
Q525
Q524
RT510 V.CAP
D607
Q531
D712
IC741
16 CH
15 BG
14
13 SYNC
12 5V
11 OSC1
10 OSC2
9 RESET
DATE IN 1 Lo
SHIFT 2 Lo
NUMERAL 3
4
5
GND 6
7
GND 8
X741
IC704
BUFFER
BUFFER
Q712
E.F
D711
PB 9V
D714
IC702
BUFFER
OUTPUT AMP
OUTPUT AMP
B+
PG706
CN706
12V
7 12V 7
M9V
3 M9V 3
9 9V 9
8 5V 8
5 +B(CYL.) 5
6 FB (CYL.) 6
1 +B(CAPST.) 1
11 SLOW ADJ 11
2 FB(CAPST.) 2
4 +B FB 4
12 SEARCH, SLOW, STILL 12
13 SAVE 13
IC1
B+
12V FILTER
M9V FILTER
9V FILTER
9V REG
Q1
RT1
9V ADJUST
5V FILTER
5V REG
Q2
RT2
5V ADJUST
V CYL FILTER
V CYL REG
Q3
RT3
V CYL. ADJUST
RECT
OSC
Q4,5,6,7
VOLT SHIFT
SELECT E.F
V CAPST. ADJUST
RT4
Q8
POWER SAVING CONTROL
DRIVE
SAW GEN
VREF
S −1 : RELAY DRIVER
S −2 : OFF TIME DELAY
S −3 : REC SW
S −4 : PB SW
IC701
S−1 Lo:ON
S−2 Hi:ON
S−4 Hi:ON
S−3 Hi:ON
Q708
Q707
REC 9V
D708
STAND - BY
C. PAUSE
AUDIO
Q705
C.REMOTE
VIDEO 110
CAMERA
Q714
Q709
Q750
Q751
D713
D709
D706
SB
SA
ON
D705
D707
TUNER/ADAPTER
SWITCH MOUNTED IN TUNER/ADAPTOR CONNECTOR
ON : WHEN TUNER OR ADAPTOR CONNECTED
CN508
PG508
1 SLOW TRACKING 1
2 REMOTE 2
3 GND 3
4 VAR SLOW 4
2.5⌀
3.5⌀
PG703
1 CYL FG
2 OSC STOP
3 REC 9V
4
5 S ON S
6 MUTE
7 PB
8 9V
9 GND
10 AUDIO IN
11 GND
12 AUDIO OUT
To AUDIO PG401 VIA CN4713
EARPHONE
MICROPHONE
AUDIO LINE IN
AUDIO LINE OUT
VIDEO LINE IN
VIDEO LINE OUT
RF OUT
S3
AUDIO
S1
VIDEO
S2
CAMERA
S4
REMOTE
CAMERA CONNECTOR SWITCH
CAMERA
NO CAMERA
PG702
1 VIDEO OUT
2 GND
3 AUDIO OUT
4 9V
To RF CONVERTOR PG001 VIA CN0712
PERI JACK
PG701
8 5V
7 9V
6 REC9V
5 PB9V
4 GND
3 VIDEO
2 GND
1 VIDEO
To LUMINANCE / CHROMA CN2721
PG704
8 DATE
7 INSERT
6 S ON S
5 GND
4 REMOTE
3 STAND-BY
2 CAMERA
1 C.PAUSE
To SYSTEM CONTROL PG803 VIA CN7843
PG715
1 REMOTE
2 CAMERA
3 VTR
CAM
VTR
CN715
PG711
1 15V/12V
2 15V/12V
CN711
F701 3.15A
PG712
1 12V
2 12V
F703 4A
PG710
1 12V
2 GND
F710 4A
INT. BATT. TACK
To LOADING MOTOR DRIVER PG902 VIA CN7992
PG709
1 GND
2 M9V
PG714
1 NUMERAL
2 SHIFT
3 GND
DATE IN SW
8
9
10
11
12
13
14
15

SYSTEM CONTROL

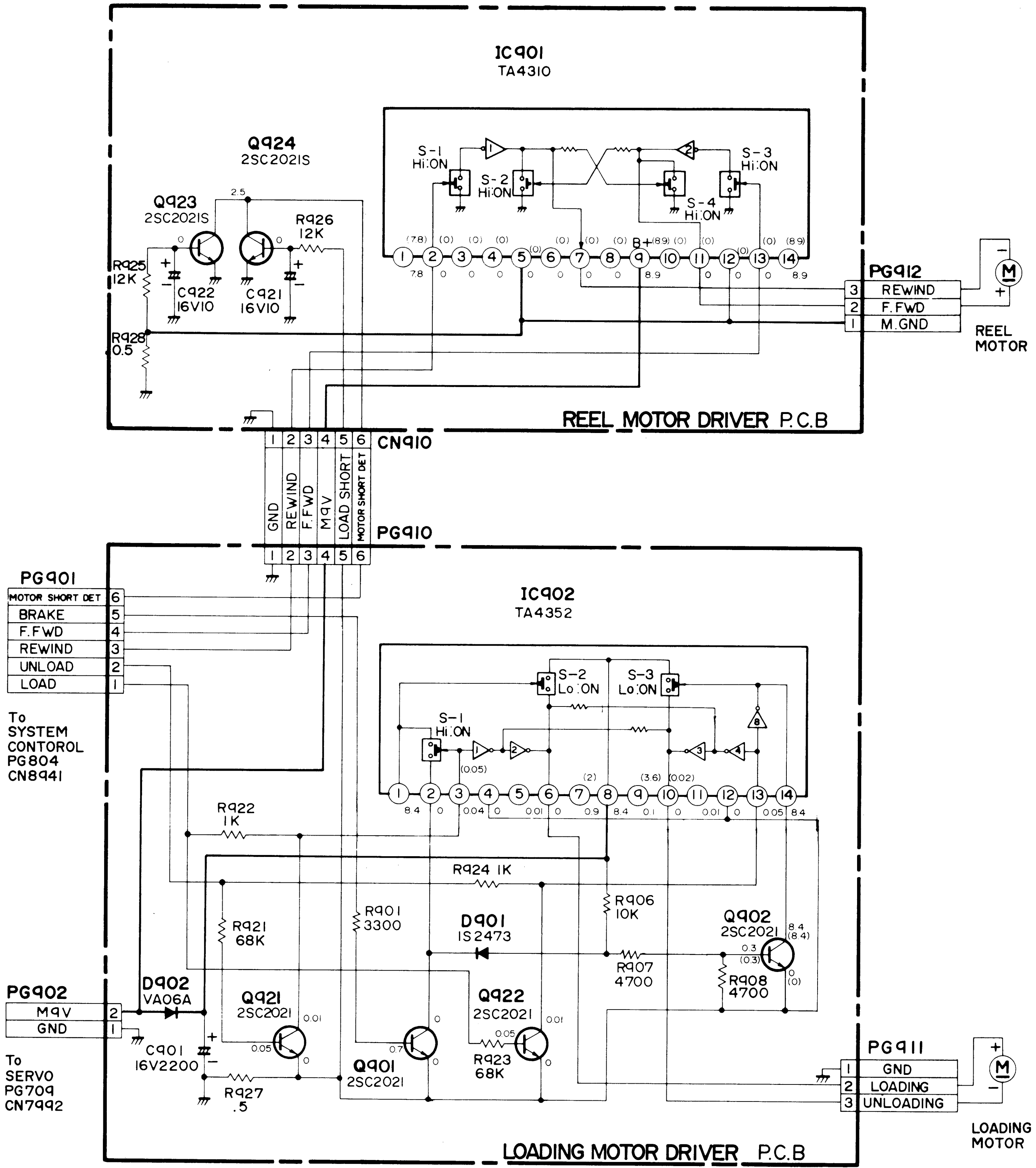

MT801 BATTERY METER
D802 1S2473
IC802 TA4316A POWER HOLD
IC803 TA4312A BATTERY METER DRIVER CAMERA STAND-BY
OVER DISCHARGE LEVEL
D820
Q814 2SC2603 RESET
IC804 DECODER
MECHA STATE SENSOR C.B.A
S814 MODE SW
D903 DAN201
D904 DAN201
STOP
FF/REW
PAUSE
PLAY
F.SLOW
S801 POWER SW
CN820 CN821 PLAY
CN810 PG810 STOP/FF/REW PAUSE/PB/FF/REW F.SLOW/PLAY GND
D840
Q815 2SA937Q TIME ON DET
D803 DAN201
D805 1S2473
D821 HZ7B
CN814 PG814 GND DEW
DEW SENSOR
Q913 PN150TV
CN813 PG813 5V REWIND END
TAKE-UP END SENSOR C.B.A
IC806 MB4204 COMPARATOR
IC801 HD44820A48
D810 1S2473
D814 1S2473
D816 1S2473
D809 1S2473
D822 HZ9C3
CN812 PG812 5V FORWARD END
Q912 PN150TV
SUPPLY END SENSOR C.B.A
B801 R0717
VR801 KB265
D830~D837 LN81CP HL
Q813 2SC2021S
D838
D834 D835 D836 D837
Q801 Q802 Q803 Q804 Q805 Q806 Q807 Q808 Q809
Q801~Q809 2SA937Q SW
S805 REWIND
S806 STOP
S807 FFWD
S808 PLAY
S809 RECORD A DUB
S810 PAUSE
S811 PAUSE
S812 V DUB
D851 1S2473
Q812 2SC2021S
IC808 TA4313A BUFFER
Q816 2SA937Q
S915
CN815 PG815 5V HOLDER UP
CASSETTE HOLDER SW C.B.A
D823 RD5.1B
IC807 TA4340 D/A CONVERTOR
Q2 Q1
SAFETY TAB SW C.B.A
S916
CN816 PG816 GND NO TAB
IC903 OM101A
Q903 2SC2021S
CN817 PG817 GND 9V REEL LOCK
D806 1S2473
REEL SENSOR C.B.A
1 2 3 4 5 6 7 8
A B C D E

OPERATION SWITCH, SYSTEM CONTROL P.

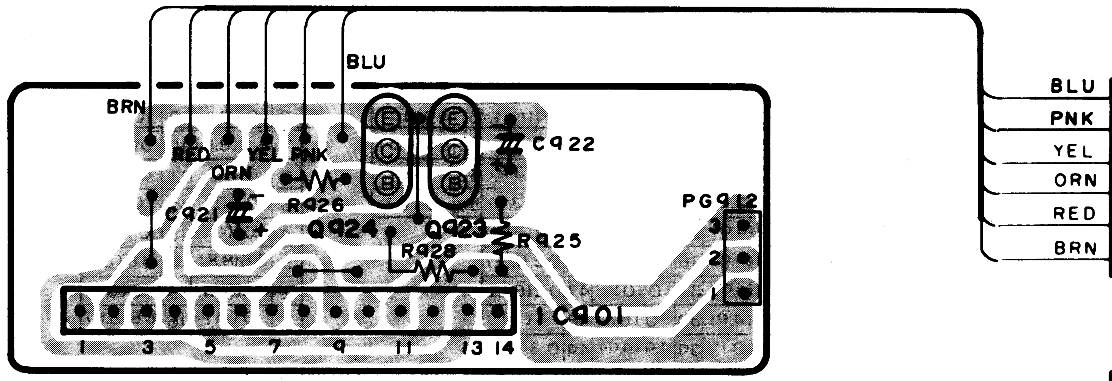
X VOLTAGES ARE MEASURED PLAY MODE, AND VOLTA


IC804
μPD4555
DECODER
PG801(A)
5V
12V
TIME ON
GND
12V (AC)
PLAY
REC
SPEED PLAY
MUTE
9V
CYL LOCK
SAVE
To SERVO PG705(A) VIA CN7851
R862 100
R845 100
R864 68K
R865 68K
PG801(B)
POWER SW ON
R POWER
SLOW
FRAME ADV
SEARCH
REC/DUB
PB/DUB
PAUSE
LOAD
REVERSE
CYL ON
OSC STOP
To SERVO PG705(B) VIA CN7851
R844 100
R850 3.3K
R849 3.3K
IC805
μPD4049
BUFFER
PG803
C. PAUSE
CAMERA
STAND-BY
REMOTE
GND
S ON S
V DUB
DATE
To SERVO PG704 VIA CN7843
D841
RD5.1JB1
DATE
MODE SW S804
S ON S
R867 68K
R866 15K
R843 22K
PG811
CN811
COUNT END
GND
MEMORY SWITCH S803
COUNTER SWITCH
IC810
C820 .0047
PG804
MOTOR SHORT
BRAKE
F.FWD
REWIND
UNLOAD
LOAD
To LOADING MOTOR DRIVER PG901
Q816
2SA937Q
PG818
CN818
END LED
GND
D912
LN55
D913
LN55
END
END LAMP C.B.A
STEM CONTROL P.C.B

ARE MEASURED PLAY MODE, AND VOLTAGES IN ( ) ARE RECODE MODE.


IC901
TA4310
Q924
2SC2021S
Q923
2SC2021S
R926 12K
R925 12K
C922 16V10
C921 16V10
R928 0.5
S-1 Hi:ON
S-2 Hi:ON
S-3 Hi:ON
S-4 Hi:ON
B+
PG912
REWIND
F.FWD
M.GND
REEL MOTOR
REEL MOTOR DRIVER P.C.B
CN910
GND
REWIND
F.FWD
M9V
LOAD SHORT
MOTOR SHORT DET
PG910
PG901
MOTOR SHORT DET
BRAKE
F.FWD
REWIND
UNLOAD
LOAD
To SYSTEM CONTOROL PG804 CN8941
IC902
TA4352
S-1 Hi:ON
S-2 Lo:ON
S-3 Lo:ON
R922 1K
R924 1K
R906 10K
R921 68K
R901 3300
D901 1S2473
Q902 2SC2021
R907 4700
R908 4700
PG902
M9V
GND
To SERVO PG709 CN7992
D902 VA06A
C901 16V2200
R927 .5
Q921 2SC2021
Q901 2SC2021
Q922 2SC2021
R923 68K
PG911
GND
LOADING
UNLOADING
LOADING MOTOR
LOADING MOTOR DRIVER P.C.B
8
9
10
11
12
13
14
15
16

※VOLTAGES ARE MEASURED IN PLAY MODE, AND VOLTAGES IN ( ) ARE RECORD MODE.


BLU
BRN
RED
ORN
YEL
PNK
C922
C921
R926
Q924
Q923
R928
R925
PG912
3
2
1
IC901
1
3
5
7
9
11
13
14
BLU
PNK
YEL
ORN
RED
BRN

REEL MOTOR DRIVER P.C.B

CN910

6	MOTOR SHORT	
5	L/M SHORT	
4	M9V	
3	F FWD	To LOADING MOTOR DRIVER PG910
2	REWIND	
1	GND	

IC901

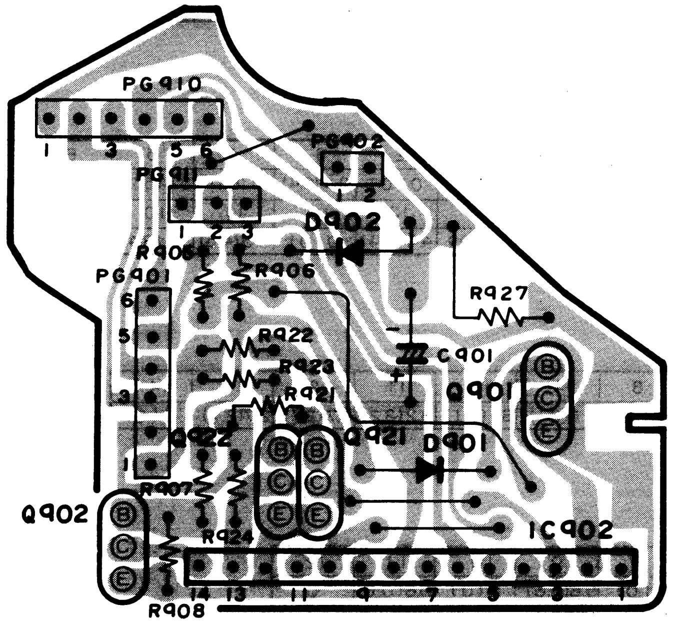
1	2	3	4	5	6	7	8	9	10	11	12	13	14
7.8 (7.8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8.9 (8.9)	0 (0)	0 (0)	0 (0)	0 (0)	8.9 (8.9)

Q923

B	0 (0)
C	2.5 (2.5)
E	0 (0)

Q924

B	0 (0)
C	2.5 (2.5)
E	0 (0)


PG910
1
3
5
6
PG902
1
2
PG911
1
2
3
D902
R905
R906
PG901
6
5
3
1
R927
R922
R923
R921
C901
Q901
Q922
Q921
D901
R907
Q902
R924
IC902
R908
14
13
11
9
7
5
3
1

LOADING MOTOR DRIVER P.C.B

IC902

14	13	12	11	10	9	8	7	6	5	4	3	2	1
8.4 (8.4)	0.05 (0.05)	0 (0)	0.01 (0.01)	0 (0.02)	0.1 (3.6)	8.4 (8.4)	0.9 (2.0)	0 (0)	0.01 (0.01)	0 (0)	0.04 (0.05)	0 (0)	8.4 (8.4)

Q901

B	0.7 (0.7)
C	0 (0)
E	0 (0)

Q902

B	0.3 (0.05)
C	8.4 (8.4)
E	0 (0)

Q921

B	0.05 (0.05)
C	0.01 (0.05)
E	0 (0)

Q922

B	0.05 (0.05)
C	0.05 (0.06)
E	0 (0)

PG912

3	REWIND	To REEL MOTOR CN912
2	F FWD	
1	GND	

PG901

6	MOTOR SHORT	
5	BRAKE	To SYSTEM CONTROL PG804
4	F FWD	
3	REWIND	
2	UNLOAD	
1	LOAD	

PG902

2	M9V	To SERVO PG709 VIA CN7992
1	GND	

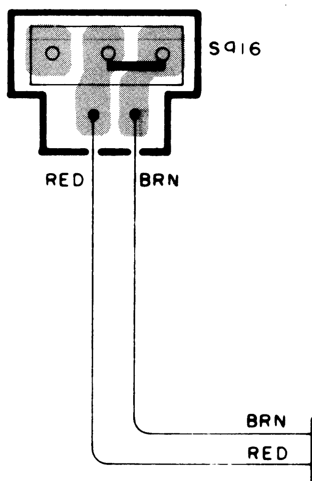
PG910

6	MOTOR SHORT	
5	L/M SHORT	
4	M9V	
3	F FWD	To REEL MOTOR DRIVER CN910
2	REWIND	
1	GND	

PG911

3	UNLOADING	To LOADING MOTOR CN911
2	LOADING	
1	GND	

SAFETY TAB SW P.C.B

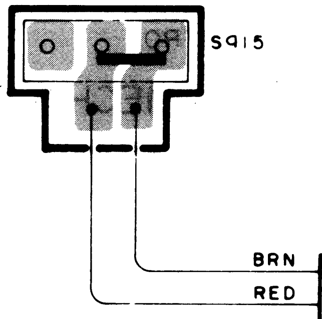

S916
RED
BRN
BRN
RED

CN816

1	NO TAB	
2	GND	

To
SYSTEM CONTROL
PG816

CASSETTE HOLDER SW P.C.B

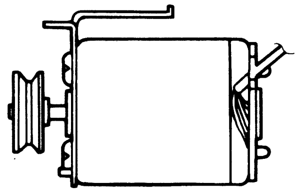

S915
BRN
RED

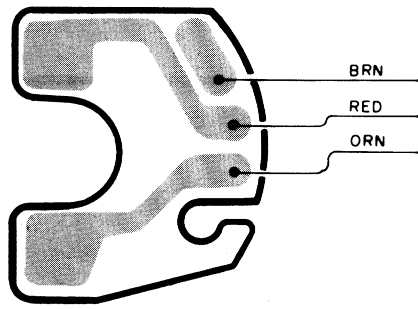
CN815

1	HOLDER UP	
2	5V	

To
SYSTEM CONTROL
PG815

LOADING MOTOR



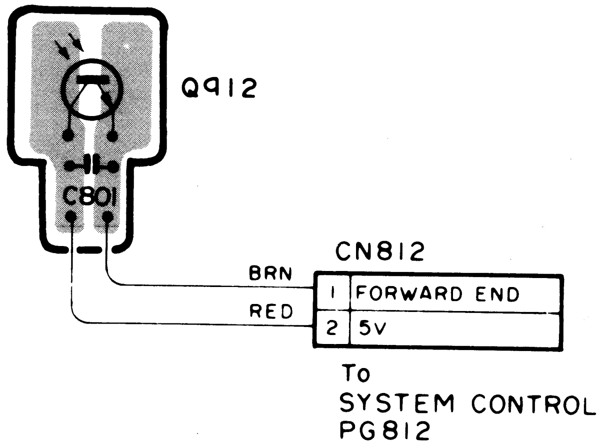


CN911

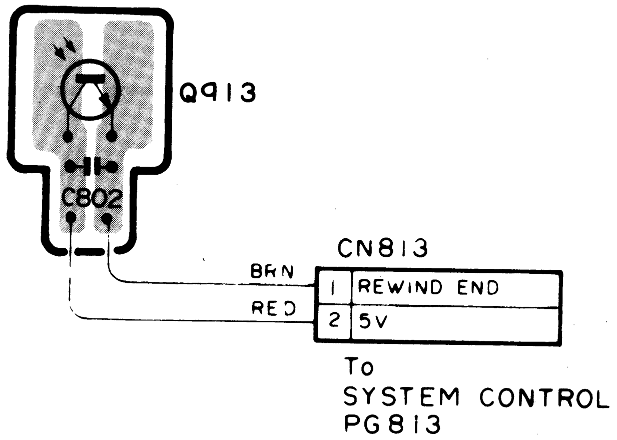
1	GND	
2	LOADING	
3	UNLOADING	

To
LOADING
MOTOR DRIVER
PG911

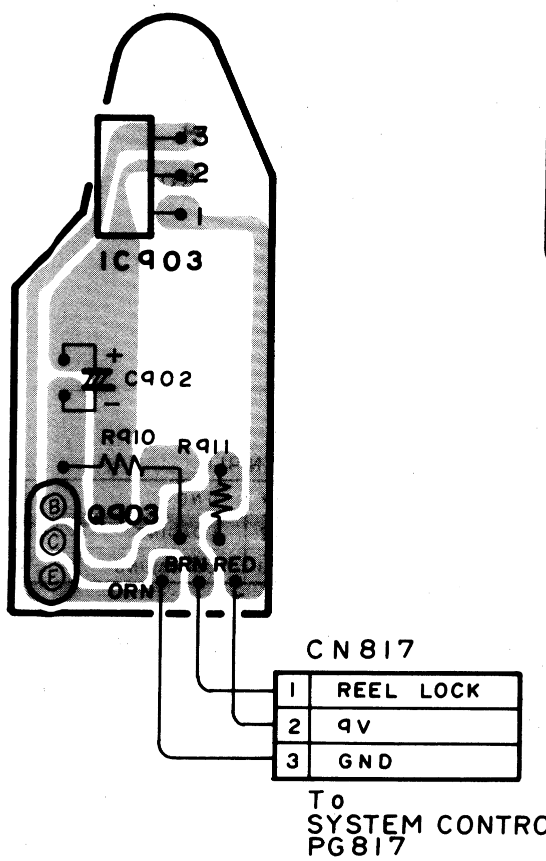
SUPPLY END SENSOR P.C.B


Q912
C801
BRN
RED
CN812
1 FORWARD END
2 5V
To
SYSTEM CONTROL
PG812

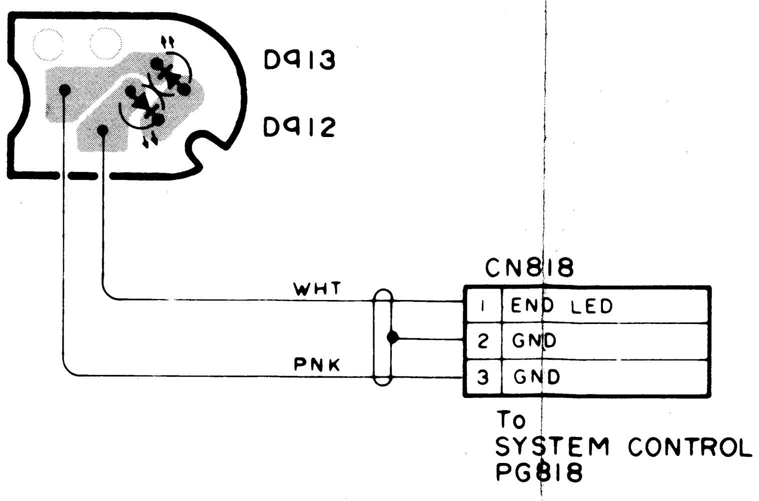
TAKE-UP END SENSOR P.C.B


Q913
C802
BRN
RED
CN813
1 REWIND END
2 5V
To
SYSTEM CONTROL
PG813

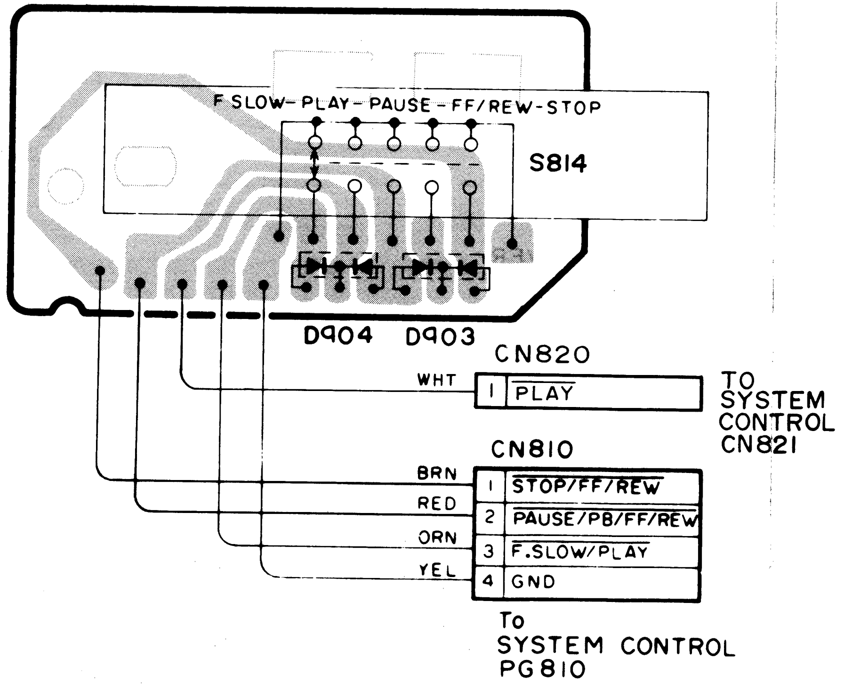
REEL SENSOR P.C.B


3
2
1
IC903
C902
R910
R911
Q903
B
C
E
ORN
BRN
RED
CN817
1 REEL LOCK
2 9V
3 GND
To
SYSTEM CONTROL
PG817

END LAMP P.C.B


D913
D912
WHT
PNK
CN818
1 END LED
2 GND
3 GND
To
SYSTEM CONTROL
PG818

MECHA STATE SENSOR SW P.C.B


F SLOW-PLAY-PAUSE-FF/REW-STOP
S814
D904
D903
CN820
WHT
1 PLAY
TO
SYSTEM
CONTROL
CN821
CN810
BRN
RED
ORN
YEL
1 STOP/FF/REW
2 PAUSE/PB/FF/REW
3 F.SLOW/PLAY
4 GND
To
SYSTEM CONTROL
PG810

IC801

1	5.6(5.6)	11	8.8(8.8)	21	0(0)	31	0(0)	41	4.9(1.4)	51	4.9(4.9)
2	0.6(0.6)	12	8.8(8.8)	22	0(0)	32	4.9(4.9)	42	0.7(3.9)	52	0.5(0.5)
3	0.6(0.6)	13	0(8.8)	23	2.5(2.5)	33	0.5(0.5)	43	3.9(3.9)	53	4(4)
4	0.6(0.6)	14	8.8(0)	24	2.5(2.5)	34	0.5(0.5)	44	3.9(3.9)	54	0(0)
5	1.2(1.2)	15	8.8(8.8)	25	4.9(4.9)	35	4.9(4.9)	45	3.9(3.9)		
6	4.7(4.7)	16	8.8(8.8)	26	4.9(4.9)	36	0(0)	46	0.2(0.2)		
7	8.1(0.1)	17	4.9(4.9)	27	4.9(4.9)	37	0(0)	47	0.2(0.2)		
8	8.5(0.9)	18	0.5(0.5)	28	4.9(4.9)	38	0(0)	48	4(4)		
9	0(0)	19	4.9(4.9)	29	0(0)	39	4.9(4.9)	49	0.3(0.3)		
10	8.8(8.8)	20	4.9(4.9)	30	4.9(4.9)	40	4.9(4.9)	50	0.5(0.5)		

IC804

8	0(0)	9	0(0)
7	8.8(8.8)	10	0(8.6)
6	0(0)	11	8.6(0)
5	0(0)	12	0(0)
4	0(0)	13	0(8.8)
3	8.8(8.8)	14	8.8(0)
2	8.8(8.8)	15	0(0)
1	0(0)	16	8.8(8.8)

IC802

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(0)	0.6(0.6)	0(0)	5(5)	12.1(12.2)	11.9(11.9)	0(0)	4.9(4.9)	0(0)	4.9(4.9)	0(0)	2.4(2.4)	0.1(0.1)	0.5(0.5)

IC803

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	4.9(4.9)	3.5(3.5)	2.1(2.1)	2.9(2.9)	5(5)	3.8(3.8)	4.1(4.1)	5.1(5.1)

IC805

1	2	3	4	5	6	7	8
8.9(8.9)	0.1(0.1)	8.8(8.8)	0(0)	8.8(8.8)	8.8(8.9)	0(0)	0(0)
16	15	14	13	12	11	10	9
0(0)	0(0)	8.8(0)	0(0)	8.7(0)	0(8.8)	0.1(0.1)	8.8(8.8)

IC806

1	2	3	4	5	6	7
0(0)	0(0)	9.4(9.4)	8.1(8.1)	5.4(5.2)	0.1(0.1)	0(0)
14	13	12	11	10	9	8
0(0)	4.9(4.9)	0(0)	4.5(4.5)	3.4(3.4)	0(0)	0.1(0.1)

IC807

1	2	3	4	5	6	7	8	9	10	11	12	13	14
0(0)	3.9(3.9)	4.9(4.9)	3.9(3.9)	3.9(3.9)	4.9(4.9)	0.7(3.9)	5.4(5.2)	8.1(8.1)	8.1(8.1)	3.2(3.2)	2.7(2.7)	2.7(2.7)	0(0)

IC808

1	2	3	4	5	6	7	8	9	10	11	12
8.9(8.9)	0(0)	1.2(1.2)	0(0)	0.6(0.6)	0(0)	0.6(0.6)	0(0)	5.6(5.6)	0(0)	0.6(0.6)	0

IC810

1	4.8(4.8)
2	6.9(6.9)
3	8.8(8.8)
4	8.8(8.8)
5	8.8(8.8)
6	8.8(0)
7	8.8(8.8)
8	0(0)
9	—

Q801

B	4.5(4.5)
C	1.6(1.5)
E	4.9(4.9)

Q802

B	4.5(4.5)
C	1.6(1.5)
E	4.9(4.9)

Q803

B	4.5(4.5)
C	1.6(1.5)
E	4.9(4.9)

Q804

B	4.5(4.5)
C	4.7(2.6)
E	4.9(4.9)

Q805

B	4.9(4.5)
C	0(4.2)
E	4.9(4.9)

Q806

B	4.9(4.9)
C	0(0)
E	4.9(4.9)

Q807

B	4.9(4.9)
C	0(0)
E	4.9(4.9)

Q808

B	4.9(4.9)
C	0(0)
E	4.9(4.9)

Q809

B	4.3(4.3)
C	4.8(4.8)
E	4.9(4.9)

Q812

B	0.2(0.2)
C	0.1(0.1)
E	0(0)

Q814

B	0.6 0.6
C	0(0)
E	0(0)

Q815

B	3.6(3.6)
C	0(0)
E	11.9(11.9)

Q816

B	0.3(0.3)
C	0.1(0.1)
E	0(0)

Q813

B	0.2 0.2
C	0.1(0.1)
E	0(0)

E

D

C

B

A

PG801(A)

1	———	13
2	5V	1
3	12V	2
4	TIME ON	3
5	GND	4
6	12V (AC)	5
7	PLAY	6
8	REC	7
9	SPEED PLAY	8
10	MUTE	9
11	9V	10
12	CYL LOCK	11
13	SAVE	12

To
SERVO
PG705(A)
VIA
CN7851

PG801(B)

1	POWER SW ON
2	R. POWER
3	———
4	SLOW
5	FRAME ADV.
6	SEARCH
7	REC/DUB
8	PB/DUB
9	PAUSE
10	LOAD
11	REVERSE
12	CYL ON
13	OSC STOP

To
SERVO
PG705(B)
VIA
CN7851

PG803

1	C. PAUSE
2	CAMERA
3	STAND-BY
4	REMOTE
5	GND
6	S ON S
7	V. DUB
8	DATE

To
SERVO
PG704
VIA
CN7843

PG804

6	MOTOR SHORT
5	BRAKE
4	F. FWD
3	REWIND
2	UNLOAD
1	LOAD

To
LOADING MOTOR
DRIVE P.C.B
PG901

PG810

1	STOP/F.F/REW
2	PAUSE/PB/F.F/REW
3	F. SLOW/PLAY
4	GND

To
MECHA STATE
SENSOR P.C.B
CN810

PG811

1	COUNT END
2	GND

To
COUNTER SW
CN811

PG812

2	5V
1	FORWARD END

To
SUPPLY SENSOR
CN812

PG813

2	5V
1	REWIND END

To
TAKE-UP SENSOR
CN813

PG814

2	GND
1	DEW

To
DEW SENSOR
CN814

PG815

2	5V
1	HOLDER UP

To
CASSETTE
HOLDER SW
CN815

PG816

1	NO TAB
2	GND

To
SAFFTY
TAB SW
CN816

PG817

3	GND
2	9V
1	REEL LOCK

To
REEL SENSOR
CN817

PG818

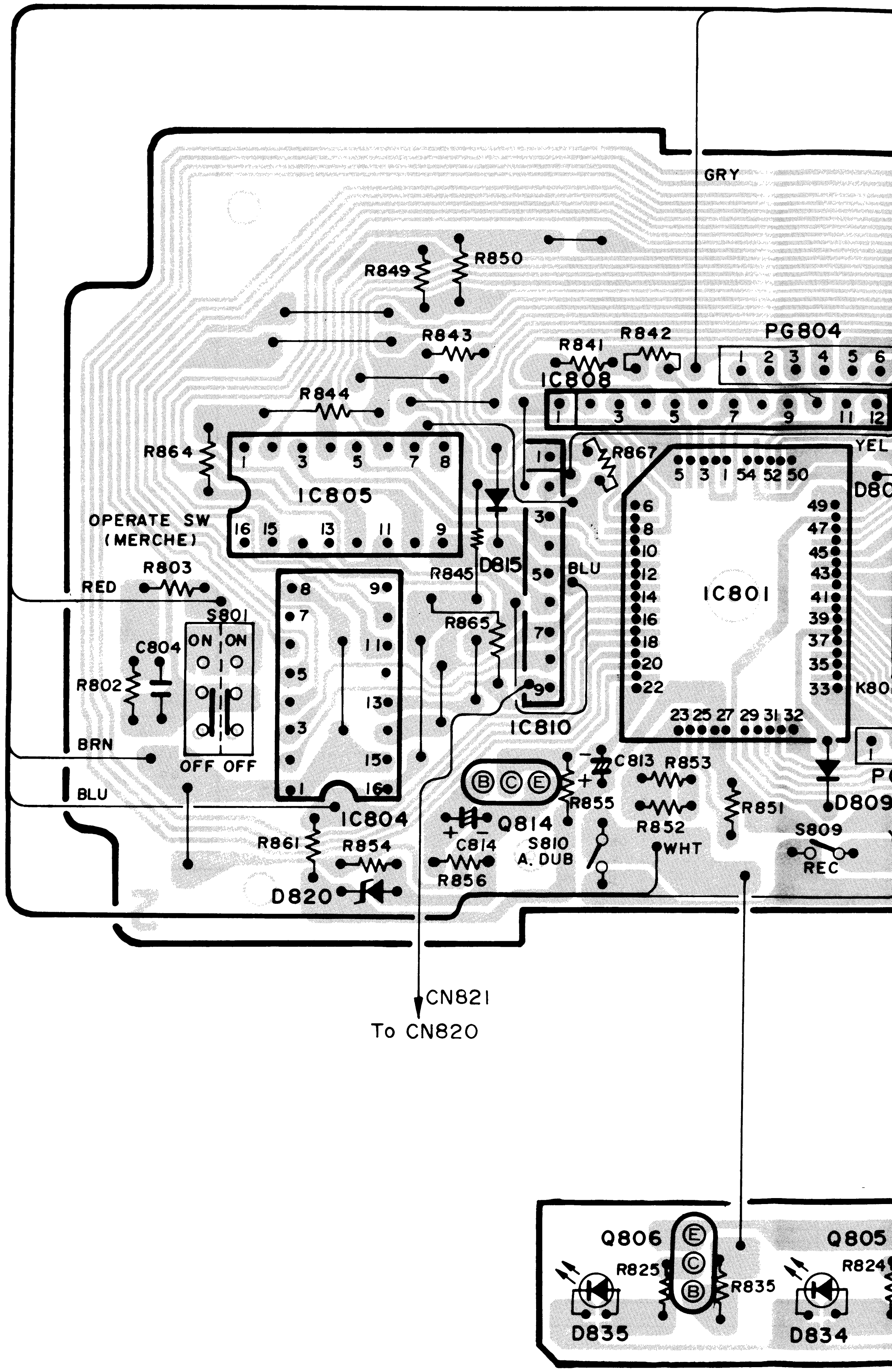
1	END LED
2	GND
3	GND

To
END LAMP
CN818

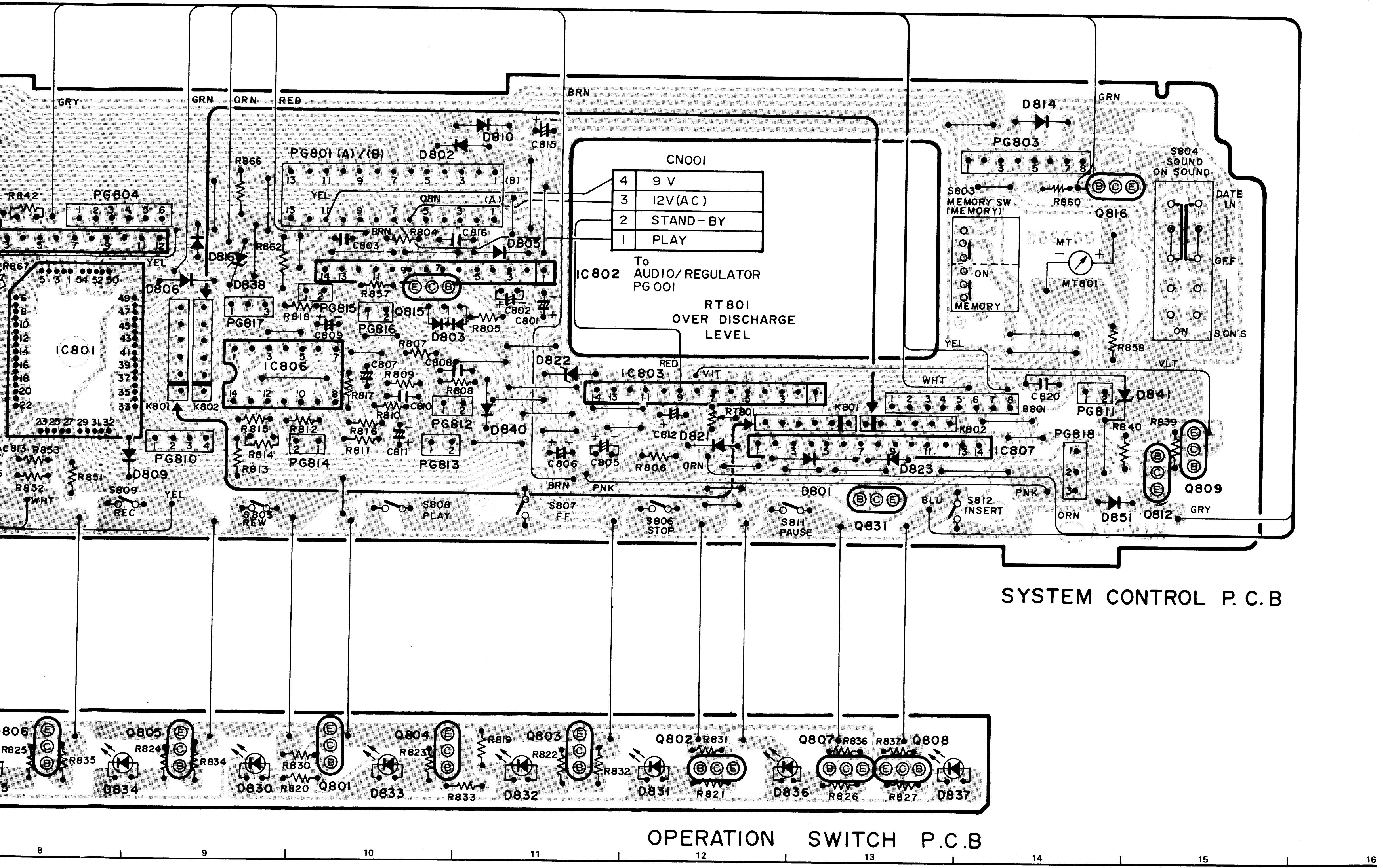
CN821

1	PLAY

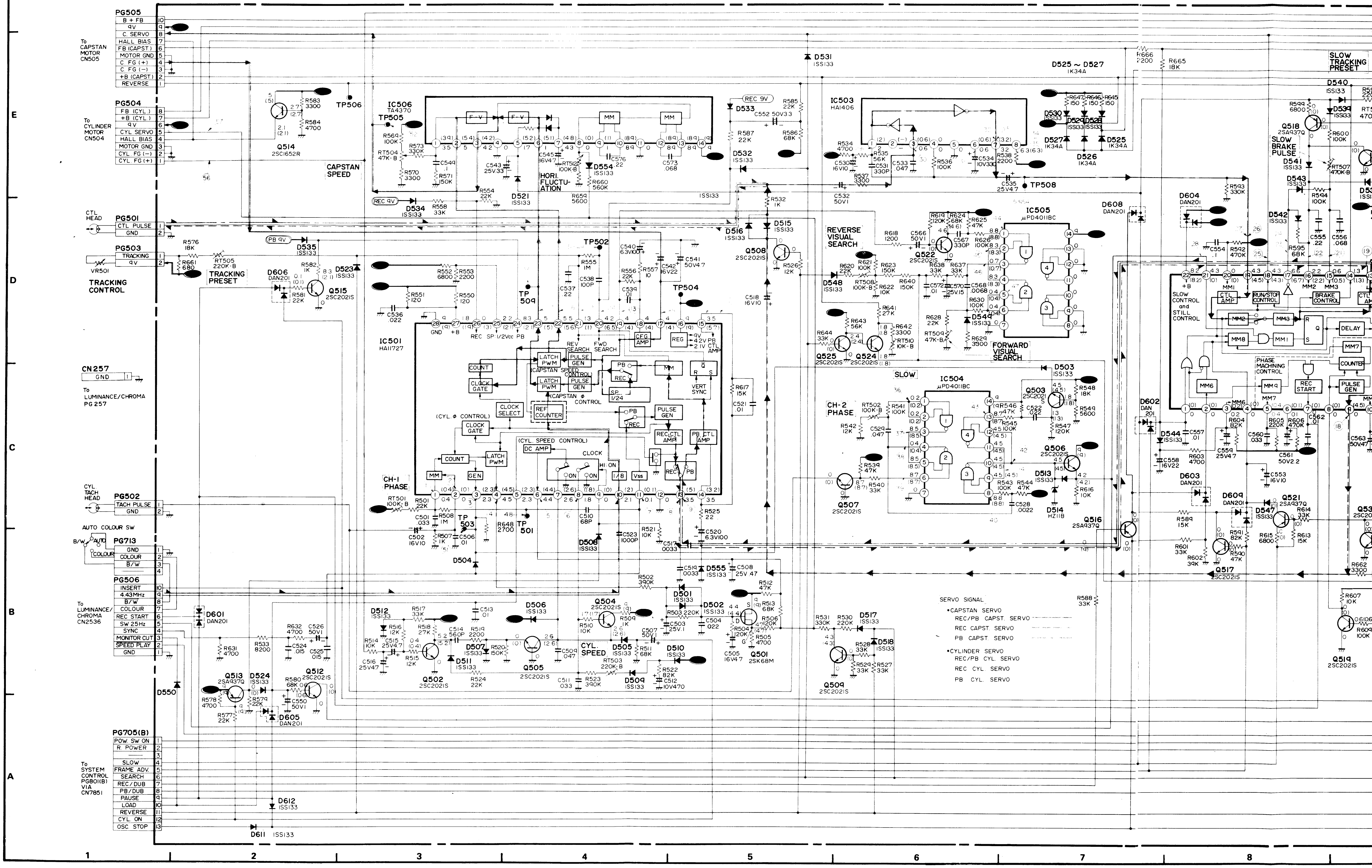
To
MECHA STATE
SENSOR P.C.B
CN820



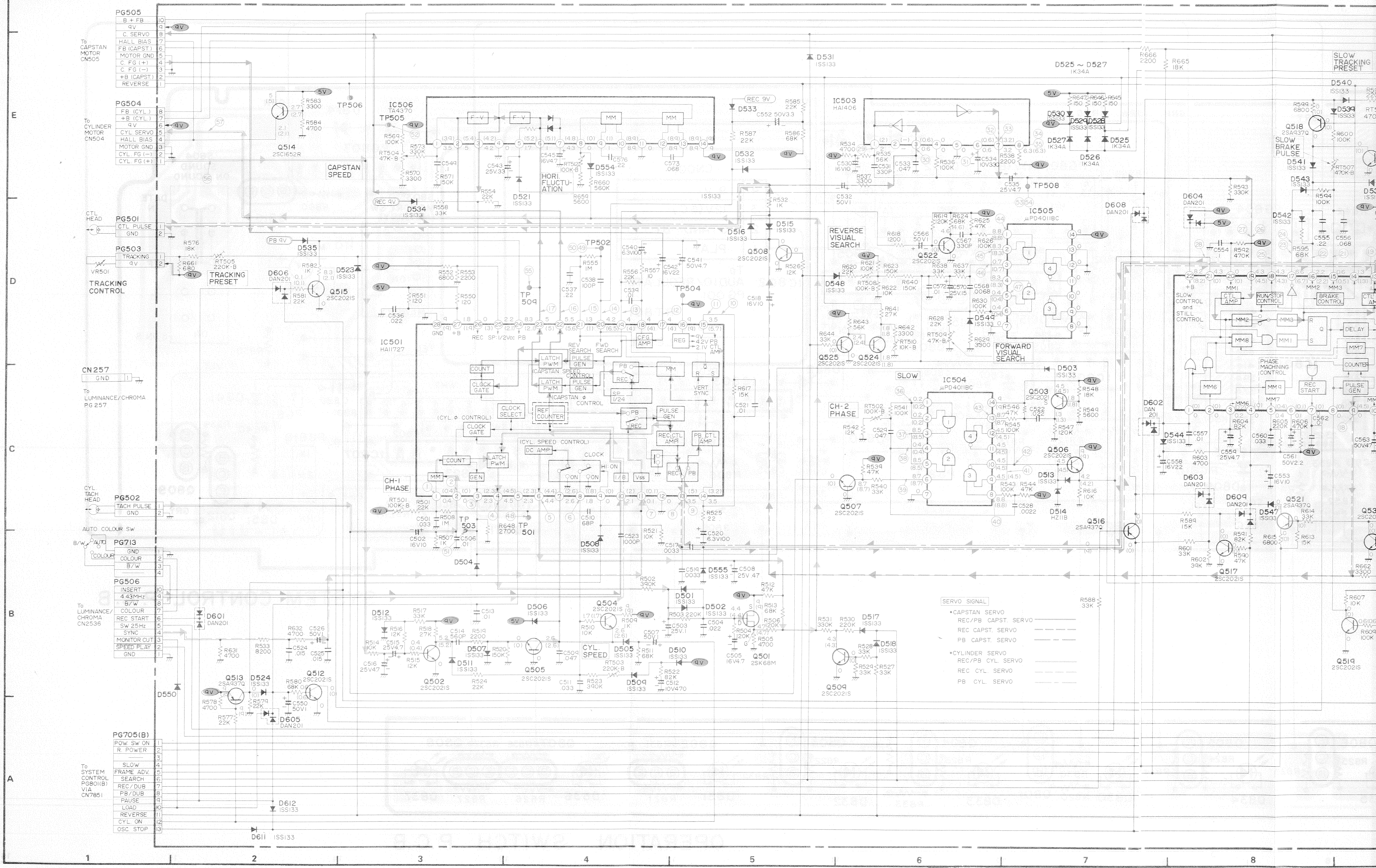
GRY
R849
R850
R843
R841
R842
PG804
1 2 3 4 5 6
IC808
1 3 5 7 9 11 12
R844
R864
IC805
1 3 5 7 8
16 15 13 11 9
R867
YEL
5 3 1 54 52 50
OPERATE SW
(MERCHE)
R803
RED
R845
D815
BLU
IC801
6 8 10 12 14 16 18 20 22
49 47 45 43 41 39 37 35 33
23 25 27 29 31 32
K80
S801
ON ON
OFF OFF
C804
R802
R865
8 9 7 11 5 13 3 15 1 16
IC810
BRN
BLU
IC804
R861
R854
D820
Q814
C814
R856
S810
A. DUB
C813
R853
R855
R852
WHT
R851
D809
S809
REC
CN821
To CN820
Q806
E C B
R825
R835
D835
Q805
R824
D834

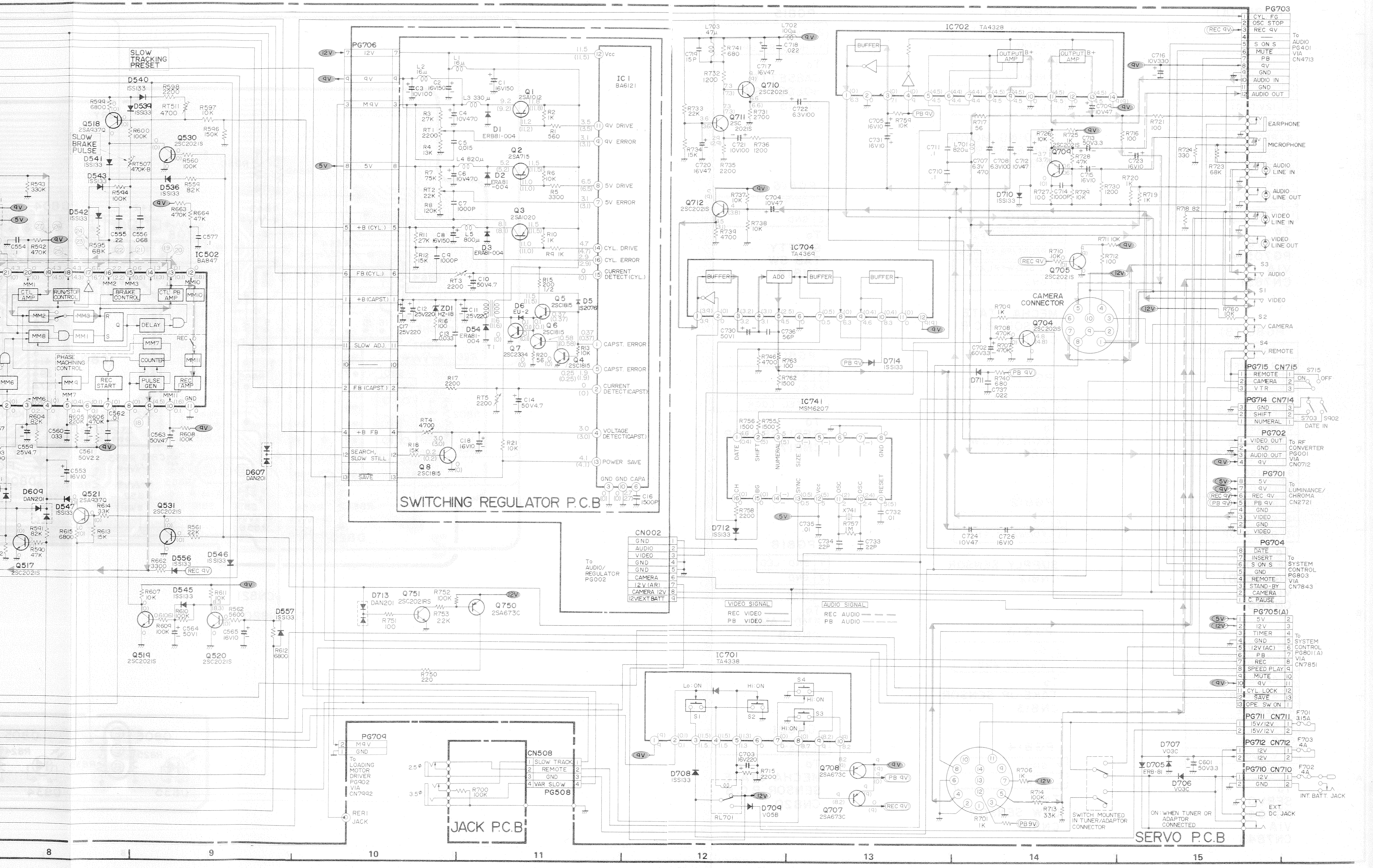

SYSTEM CONTROL P.C.B
OPERATION SWITCH P.C.B
CN001
4 9 V
3 12V(AC)
2 STAND-BY
1 PLAY
To AUDIO/REGULATOR PG001
IC802
RT801 OVER DISCHARGE LEVEL
IC801
IC803
IC806
IC807
PG801 (A)/(B)
PG803
PG804
PG810
PG811
PG812
PG813
PG814
PG815
PG816
PG817
PG818
S804 SOUND ON SOUND
DATE IN
OFF
ON
SON S
S803 MEMORY SW (MEMORY)
MEMORY
MT801
Q816
Q815
Q809
Q812
Q831
S809 REC
S805 REW
S808 PLAY
S807 FF
S806 STOP
S811 PAUSE
S812 INSERT
K801
K802
B801
GRY
GRN
ORN
RED
BRN
YEL
WHT
PNK
BLU
VLT
Q806
Q805
Q804
Q803
Q802
Q801
Q807
Q808
D834
D830
D833
D832
D831
D836
D837
8
9
10
11
12
13
14
15
16

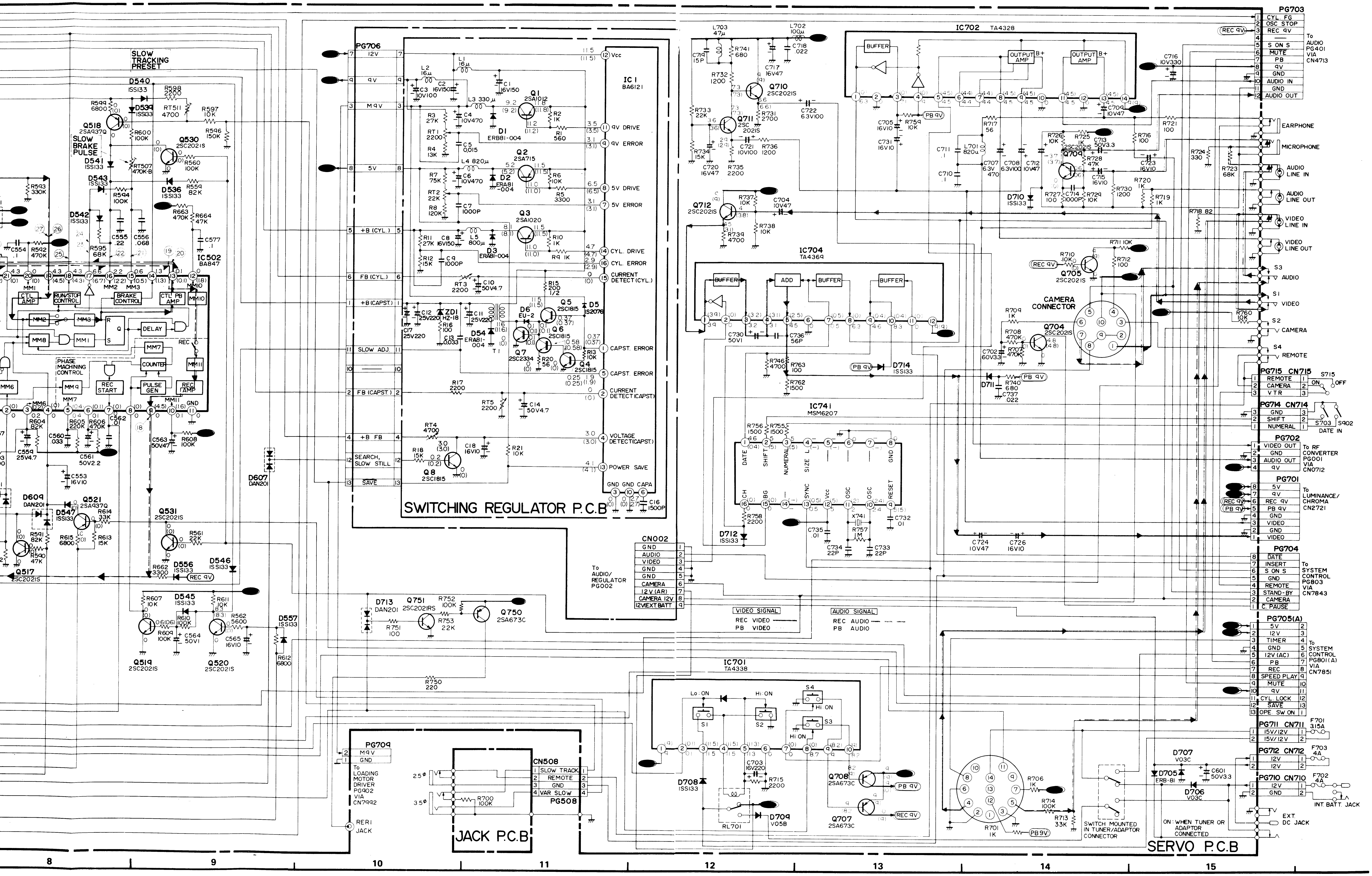
SERVO


PG505
B + FB
9V
C. SERVO
HALL BIAS
FB (CAPST.)
MOTOR GND
C. FG (+)
C. FG (−)
+B (CAPST.)
REVERSE
To CAPSTAN MOTOR CN505
PG504
FB (CYL.)
+B (CYL.)
9V
CYL SERVO
HALL BIAS
MOTOR GND
CYL FG (−)
CYL FG (+)
To CYLINDER MOTOR CN504
Q514 2SC1652R
TP506
IC506 TA4370
TP505
F-V
MM
CAPSTAN SPEED
HORI. FLUCTU-ATION
D554 1SS133
D521 1SS133
D534 1SS133
REC 9V
D531 1SS133
D533
D532 1SS133
IC503 HA1406
TP508
D525 ~ D527 1K34A
D530
D529
D528
D527 1K34A
D526 1K34A
D525 1K34A
SLOW TRACKING PRESET
D540
Q518 2SA937Q
SLOW BRAKE PULSE
D541 1SS133
D543 1SS133
D542 1SS133
CTL HEAD
PG501
CTL PULSE
GND
PG503
TRACKING
9V
VR501
TRACKING CONTROL
RT505 220K-B
TRACKING PRESET
PB 9V
D535 1SS133
D606 DAN201
Q515 2SC2021S
D523 1SS133
TP502
TP504
TP509
IC501 HA11727
GND
+B
REC
SP
1/2Vcc
PB
REV SEARCH
FWD SEARCH
CFG AMP
REG
9V
4.2V
2.1V
PB CTL AMP
LATCH PWM
PULSE GEN
CAPSTAN SPEED CONTROL
CAPSTAN φ CONTROL
COUNT
CLOCK GATE
CLOCK SELECT
REF COUNTER
CYL. φ CONTROL
CYL. SPEED CONTROL
DC AMP
CLOCK
ON
HI: ON
1/8
Vss
SP 1/24
VERT SYNC
REC CTL AMP
PB CTL AMP
GEN
MM
CH-1 PHASE
TP 503
TP 501
D508 1SS133
D504
D516 1SS133
D515 1SS133
Q508 2SC2021S
REVERSE VISUAL SEARCH
Q522 2SC2021S
D548 1SS133
Q525 2SC2021S
Q524 2SC2021S
IC505 μPD4011BC
D544 1SS133
FORWARD VISUAL SEARCH
D608 DAN201
D604 DAN201
SLOW CONTROL and STILL CONTROL
CTL AMP
RUN/STOP CONTROL
BRAKE CONTROL
MM2
MM3
MM1
MM8
R
S
Q
DELAY
MM7
PHASE MACHINING CONTROL
COUNTER
MM6
MM9
REC START
PULSE GEN
SLOW
IC504 μPD4011BC
D503 1SS133
Q503 2SC2021S
CH-2 PHASE
Q506 2SC2021S
D513 1SS133
D514 HZ11B
Q507 2SC2021S
Q516 2SA937Q
D602 DAN201
D544 1SS133
D603 DAN201
D609 DAN201
D547 1SS133
Q521 2SA937Q
Q517 2SC2021S
CN257
GND
To LUMINANCE/CHROMA PG257
CYL TACH HEAD
PG502
TACH PULSE
GND
AUTO COLOUR SW
B/W
AUTO
COLOUR
PG713
GND
COLOUR
B/W
PG506
INSERT
4.43MHz
B/W
COLOUR
REC START
SW 25Hz
SYNC
MONITOR CUT
SPEED PLAY
GND
To LUMINANCE/CHROMA CN2536
D601 DAN201
D512 1SS133
Q502 2SC2021S
D511 1SS133
D507 1SS133
D506 1SS133
Q505 2SC2021S
Q504 2SC2021S
CYL. SPEED
D505 1SS133
D509 1SS133
D510 1SS133
D555 1SS133
D501 1SS133
D502 1SS133
Q501 2SK68M
D517 1SS133
D518 1SS133
Q509 2SC2021S
Q519 2SC2021S
Q513 2SA937Q
D524 1SS133
Q512 2SC2021S
D605 DAN201
D550
PG705(B)
POW. SW ON
R. POWER
SLOW
FRAME ADV.
SEARCH
REC/DUB
PB/DUB
PAUSE
LOAD
REVERSE
CYL. ON
OSC STOP
To SYSTEM CONTROL PG801(B) VIA CN7851
D612 1SS133
D611 1SS133
SERVO SIGNAL
•CAPSTAN SERVO
REC/PB CAPST. SERVO
REC CAPST. SERVO
PB CAPST. SERVO
•CYLINDER SERVO
REC/PB CYL. SERVO
REC CYL. SERVO
PB CYL. SERVO
1
2
3
4
5
6
7
8
A
B
C
D
E

SERVO


PG505
B + FB
9V
C. SERVO
HALL BIAS
FB (CAPST.)
MOTOR GND
C. FG (+)
C. FG (−)
+B (CAPST.)
REVERSE
To CAPSTAN MOTOR CN505
PG504
FB (CYL.)
+B (CYL.)
9V
CYL SERVO
HALL BIAS
MOTOR GND
CYL. FG (−)
CYL. FG (+)
To CYLINDER MOTOR CN504
CTL HEAD
PG501
CTL PULSE
GND
PG503
TRACKING
9V
VR501
TRACKING CONTROL
TRACKING PRESET
RT505 220K-B
Q514 2SC1652R
IC506 TA4370
TP505
TP506
CAPSTAN SPEED
HORI. FLUCTU-ATION
D521 1SS133
D534 1SS133
D535 1SS133
D554 1SS133
TP502
TP504
TP509
IC501 HA11727
COUNT
CLOCK GATE
CLOCK SELECT
REF COUNTER
LATCH PWM
PULSE GEN
CAPSTAN SPEED CONTROL
(CAPSTAN φ CONTROL)
(CYL. φ CONTROL)
(CYL. SPEED CONTROL)
DC AMP
CLOCK
REV SEARCH
FWD SEARCH
CFG AMP
REG
VERT SYNC
SP 1/24
REC CTL AMP
PB CTL AMP
CH-1 PHASE
MM
GEN
Q515 2SC2021S
D606 DAN201
D523 1SS133
D531 1SS133
D533
D532 1SS133
D515 1SS133
D516 1SS133
Q508 2SC2021S
REC 9V
PB 9V
IC503 HA1406
TP508
D525 ~ D527 1K34A
D526 1K34A
D528
D529
D530 1SS133
IC505 μPD4011BC
REVERSE VISUAL SEARCH
FORWARD VISUAL SEARCH
Q522 2SC2021S
Q524 2SC2021S
Q525 2SC2021S
D548 1SS133
D549 1SS133
IC504 μPD4011BC
SLOW
CH-2 PHASE
Q503 2SC2021S
Q506 2SC2021S
Q507 2SC2021S
D503 1SS133
D513 1SS133
D514 HZ11B
Q516 2SA937Q
D602 DAN201
D603 DAN201
D604 DAN201
D608 DAN201
D609 DAN201
D544 1SS133
D547 1SS133
Q517 2SC2021S
Q521 2SA937Q
Q518 2SA937Q
SLOW TRACKING PRESET
SLOW BRAKE PULSE
D539 1SS133
D540 1SS133
D541 1SS133
D542 1SS133
D543 1SS133
SLOW CONTROL and STILL CONTROL
CTL AMP
RUN/STOP CONTROL
BRAKE CONTROL
MM1
MM2
MM3
MM6
MM7
MM8
MM9
DELAY
PHASE MACHINING CONTROL
REC START
PULSE GEN
COUNTER
Q519 2SC2021S
CN257
GND
To LUMINANCE/CHROMA PG257
CYL. TACH HEAD
PG502
TACH PULSE
GND
TP503
TP501
D504
D508 1SS133
D555 1SS133
D501 1SS133
D502 1SS133
Q504 2SC2021S
Q501 2SK68M
Q502 2SC2021S
Q505 2SC2021S
CYL. SPEED
D505 1SS133
D506 1SS133
D507 1SS133
D509 1SS133
D510 1SS133
D511 1SS133
D512 1SS133
D517 1SS133
D518 1SS133
Q509 2SC2021S
AUTO COLOUR SW
B/W
AUTO
COLOUR
PG713
GND
COLOUR
B/W
PG506
INSERT
4.43MHz
B/W
COLOUR
REC START
SW 25Hz
SYNC
MONITOR CUT
SPEED PLAY
GND
To LUMINANCE/CHROMA CN2536
D601 DAN201
Q513 2SA937Q
Q512 2SC2021S
D524 1SS133
D605 DAN201
D550
PG705(B)
POW. SW ON
R. POWER
SLOW
FRAME ADV.
SEARCH
REC/DUB
PB/DUB
PAUSE
LOAD
REVERSE
CYL. ON
OSC. STOP
To SYSTEM CONTROL PG801(B) VIA CN7851
D612 1SS133
D611 1SS133
SERVO SIGNAL
•CAPSTAN SERVO
REC/PB CAPST. SERVO
REC CAPST. SERVO
PB CAPST. SERVO
•CYLINDER SERVO
REC/PB CYL. SERVO
REC CYL. SERVO
PB CYL. SERVO
A
B
C
D
E
1
2
3
4
5
6
7
8

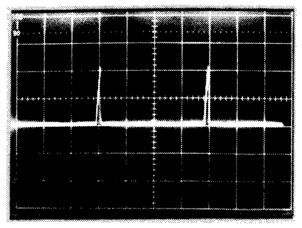

SLOW TRACKING PRESET
SLOW BRAKE PULSE
IC502 BA847
CTL AMP
RUN/STOP CONTROL
BRAKE CONTROL
CTL PB AMP
MM1
MM2
MM3
MM6
MM7
MM8
MM9
MM10
MM11
DELAY
PHASE MACHINING CONTROL
REC START
PULSE GEN
COUNTER
REC AMP
D540 1SS133
D539 1SS133
Q518 2SA937Q
Q530 2SC2021S
D541 1SS133
D543 1SS133
D536 1SS133
D542 1SS133
Q521 2SA937Q
D609 DAN201
D547 1SS133
Q531 2SC2021S
Q517 2SC2021S
D556 1SS133
D546 1SS133
D545 1SS133
Q519 2SC2021S
Q520 2SC2021S
D557 1SS133
D607 DAN201
PG706
12V
9V
M9V
5V
+B (CYL.)
FB (CYL.)
+B (CAPST.)
SLOW ADJ.
FB (CAPST.)
+B FB
SEARCH, SLOW STILL
SAVE
IC1 BA6121
Vcc
9V DRIVE
9V ERROR
5V DRIVE
5V ERROR
CYL. DRIVE
CYL. ERROR
CURRENT DETECT (CYL.)
CAPST. ERROR
CAPST. ERROR
CURRENT DETECT (CAPST.)
VOLTAGE DETECT (CAPST.)
POWER SAVE
GND GND CAPA
Q1 2SA1012
Q2 2SA715
Q3 2SA1020
Q4 2SC1815
Q5 2SC1815
Q6 2SC1815
Q7 2SC2334
Q8 2SC1815
D1 ERB81-004
D2 ERA81-004
D3 ERA81-004
D54 ERA81-004
D5 1S2076
D6 EU-2
ZD1 HZ-18
SWITCHING REGULATOR P.C.B
CN002
GND
AUDIO
VIDEO
GND
GND
CAMERA
12V (AR)
CAMERA 12V
12V EXT BATT
To AUDIO/ REGULATOR PG002
D713 DAN201
Q751 2SC2021RS
Q750 2SA673C
PG709
M9V
GND
To LOADING MOTOR DRIVER PG402 VIA CN7992
REF1 JACK
CN508
SLOW TRACK
REMOTE
GND
VAR SLOW
PG508
JACK P.C.B
IC702 TA4328
BUFFER
OUTPUT AMP
OUTPUT AMP
Q710 2SC2021S
Q711 2SC2021S
Q712 2SC2021S
IC704 TA4369
BUFFER
ADD
BUFFER
BUFFER
D714 1SS133
IC741 MSM6207
DATE
SHIFT
NUMERAL
SIZE
GND
CH
BG
SYNC
Vcc
OSC
OSC
RESET
D712 1SS133
VIDEO SIGNAL
REC VIDEO
PB VIDEO
AUDIO SIGNAL
REC AUDIO
PB AUDIO
IC701 TA4338
Lo: ON
Hi: ON
Hi: ON
Hi: ON
S1
S2
S3
S4
D708 1SS133
RL701
D709 V05B
Q708 2SA673C
Q707 2SA673C
D710 1SS133
Q709 2SC2021S
Q705 2SC2021S
Q704 2SC2021S
CAMERA CONNECTOR
D711 1SS133
SWITCH MOUNTED IN TUNER/ADAPTOR CONNECTOR
D707 V03C
D705 ERB-81
D706 V03C
ON: WHEN TUNER OR ADAPTOR CONNECTED
SERVO P.C.B
PG703
CYL. FG
OSC STOP
REC 9V
S ON S
MUTE
PB
9V
GND
AUDIO IN
GND
AUDIO OUT
To AUDIO PG401 VIA CN4713
EARPHONE
MICROPHONE
AUDIO LINE IN
AUDIO LINE OUT
VIDEO LINE IN
VIDEO LINE OUT
S3
AUDIO
S1
VIDEO
S2
CAMERA
S4
REMOTE
PG715 CN715
REMOTE
CAMERA
VTR
S715
ON
OFF
PG714 CN714
GND
SHIFT
NUMERAL
S703 S902 DATE IN
PG702
VIDEO OUT
GND
AUDIO OUT
9V
To RF CONVERTER PG001 VIA CN0712
PG701
5V
9V
REC 9V
PB 9V
GND
VIDEO
GND
VIDEO
To LUMINANCE/ CHROMA CN2721
PG704
DATE
INSERT
S ON S
GND
REMOTE
STAND-BY
CAMERA
C. PAUSE
To SYSTEM CONTROL PG803 VIA CN7843
PG705(A)
5V
12V
TIMER
GND
12V (AC)
PB
REC
SPEED PLAY
MUTE
9V
CYL. LOCK
SAVE
OPE SW ON
To SYSTEM CONTROL PG801(A) VIA CN7851
PG711 CN711
15V/12V
15V/12V
F701 3.15A
PG712 CN712
12V
12V
F703 4A
PG710 CN710
12V
GND
F702 4A
INT BATT JACK
EXT DC JACK
8
9
10
11
12
13
14
15


SLOW TRACKING PRESET
SLOW BRAKE PULSE
IC502 BA847
SWITCHING REGULATOR P.C.B
IC1 BA6121
PG706
IC702 TA4328
IC704 TA4369
IC741 MSM6207
IC701 TA4338
CAMERA CONNECTOR
PG703
To AUDIO PG401 VIA CN4713
EARPHONE
MICROPHONE
AUDIO LINE IN
AUDIO LINE OUT
VIDEO LINE IN
VIDEO LINE OUT
PG715 CN715
PG714 CN714
PG702
To RF CONVERTER PG001 VIA CN0712
PG701
To LUMINANCE/CHROMA CN2721
PG704
To SYSTEM CONTROL PG803 VIA CN7843
PG705(A)
To SYSTEM CONTROL PG801(A) VIA CN7851
PG711 CN711
PG712 CN712
PG710 CN710
INT BATT JACK
EXT DC JACK
CN002
To AUDIO/REGULATOR PG002
VIDEO SIGNAL
REC VIDEO
PB VIDEO
AUDIO SIGNAL
REC AUDIO
PB AUDIO
PG709
To LOADING MOTOR DRIVER PG402 VIA CN7992
RERI JACK
CN508
PG508
JACK P.C.B
SWITCH MOUNTED IN TUNER/ADAPTOR CONNECTOR
ON: WHEN TUNER OR ADAPTOR CONNECTED
SERVO P.C.B
8
9
10
11
12
13
14
15

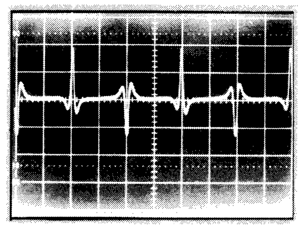
SERVO WAVEFORMS

[IC501]

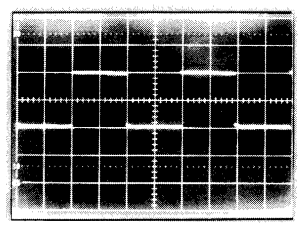
①PIN ①REC/PLAY
2V/10msec. div.



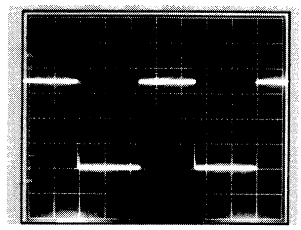
②PIN ②REC/PLAY
0.5V/10msec. div.



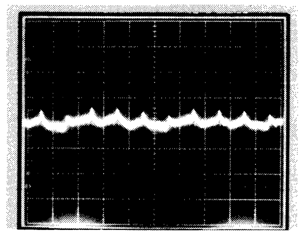
③PIN ③REC/PLAY
2V/10msec. div.



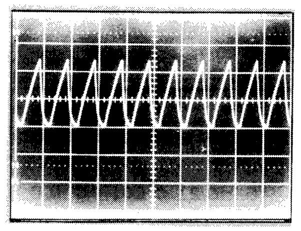
④PIN ④REC/PLAY
2V/10msec. div.



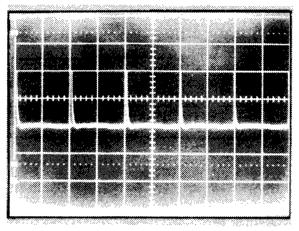
⑤PIN ⑥REC/PLAY
0.1V/10msec. div.



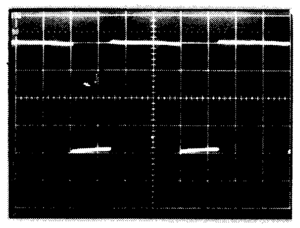
⑥PIN ⑧REC/PLAY
1V/10msec. div.



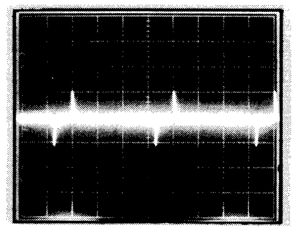
⑦PIN ⑪REC
0.5V/10msec. div.



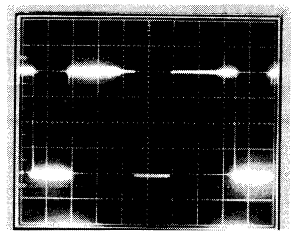
⑧PIN ⑬REC
2V/10msec. div.



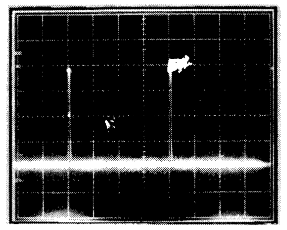
⑨PIN ⑬PLAY
50mV/10msec. div.



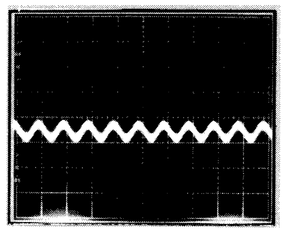
⑩PIN ⑮REC
1V/10msec. div.



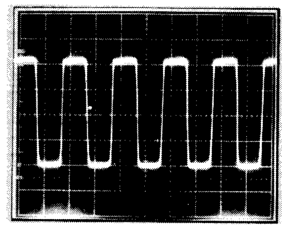
⑪PIN ⑮PLAY
1V/10msec. div.



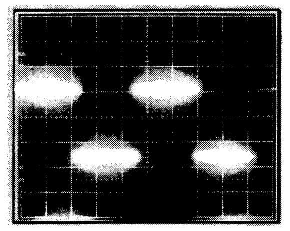
⑫PIN ⑰REC/PLAY
50mV/2msec. div.



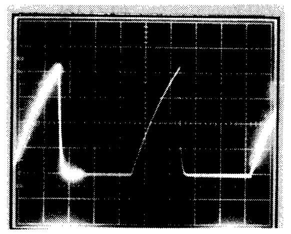
⑬PIN ⑲REC/PLAY
0.5V/1msec. div.



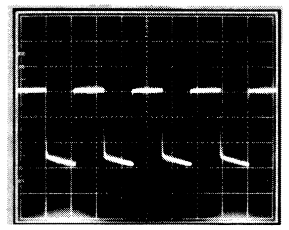
⑭PIN ⑳REC
0.1V/10msec. div.



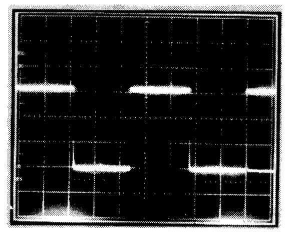
⑮PIN ㉑REC/PLAY
1V/10msec. div.



⑯PIN ㉒REC/PLAY
0.2V/0.1msec. div.

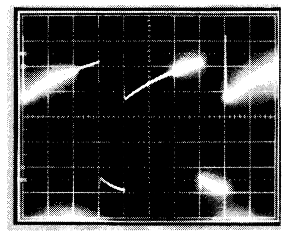


⑰PIN ㉓REC/PLAY
0.2V/0.2msec. div.

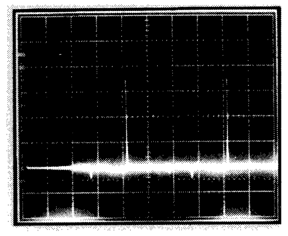


[IC502]

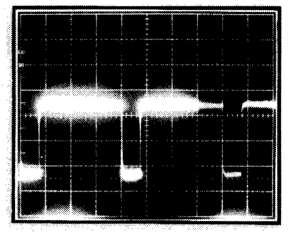
⑱PIN ⑨REC/
1V/10msec. div.



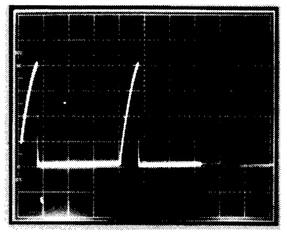
⑲PIN ⑬REC
2V/10msec. div.



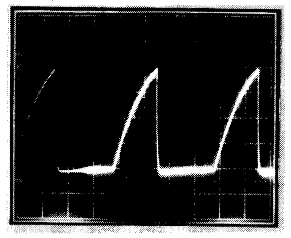
⑳PIN ⑬PLAY
50mV/10msec. div.



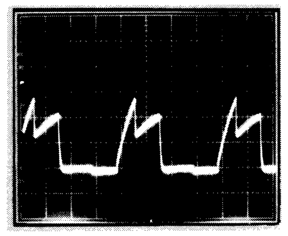
㉑PIN ⑮REC/PLAY
1V/10msec. div.



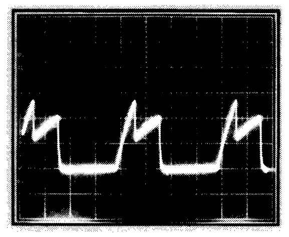
㉒PIN ⑯REC/PLAY
1V/10msec. div.



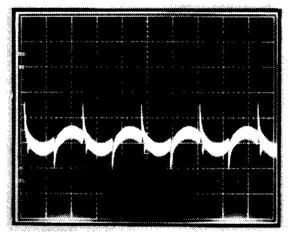
㉓PIN ⑰REC/PLAY
50mV/10msec. div.



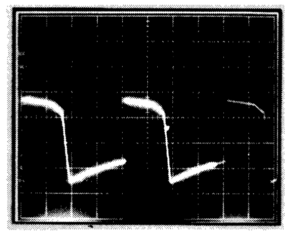
㉔PIN ⑰REC/PLAY
50mV/10msec. div.



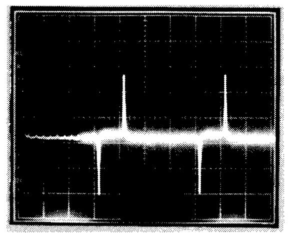
㉕PIN ⑱REC/PLAY
50mV/0.1msec. div.



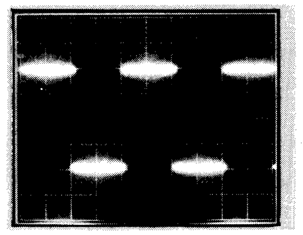
㉖PIN ⑲REC
2V/10msec. div.



㉗PIN ⑲PLAY
0.5V/10msec. div.

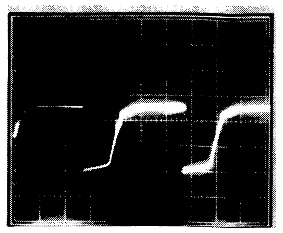


㉘PIN ㉑REC/PLAY
2V/10msec. div.

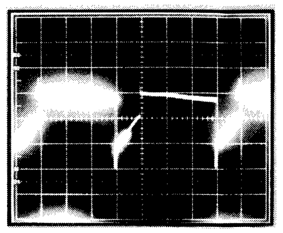


[IC503]

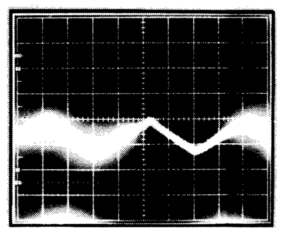
㉙PIN ①REC
1V/10msec. div.



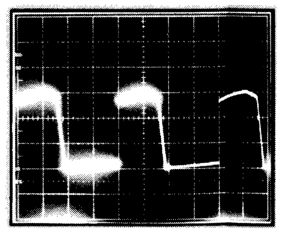
㉚PIN ③REC
0.2V/10msec. div.



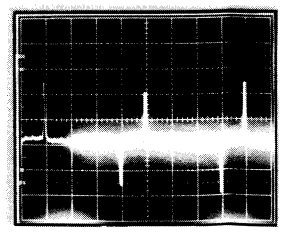
㉛PIN ⑥REC
50mV/10msec. div.



㉜PIN ⑦REC
2V/10msec. div.



㉝PIN ⑦PLAY
0.5V/10msec. div.



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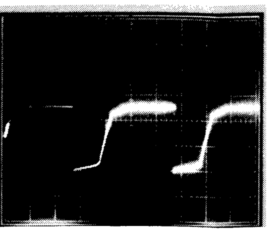
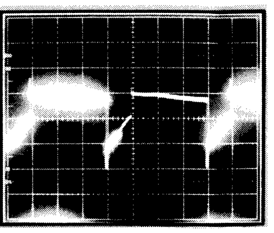
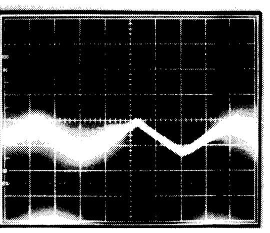
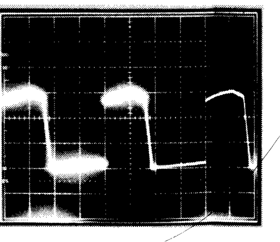
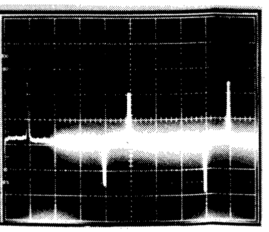
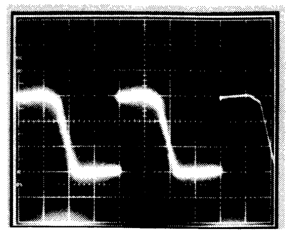

㉙PIN①REC
1V/10msec. div.

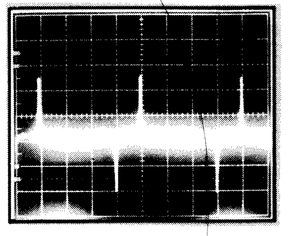

㉚PIN③REC
0.2V/10msec. div.


㉛PIN⑥REC
50mV/10msec. div.

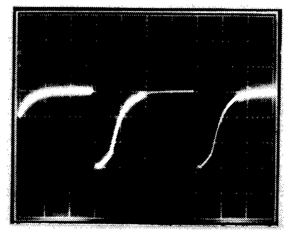

㉜PIN⑦REC
2V/10msec. div.

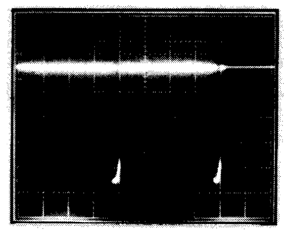

㉝PIN⑦PLAY
0.5V/10msec. div.

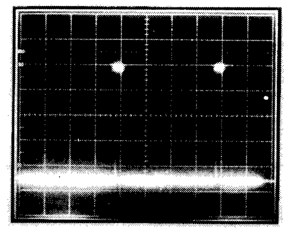

㉞PIN⑧REC
2V/10msec. div.

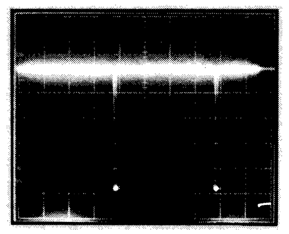

㉟PIN⑧PLAY
2V/10msec. div.

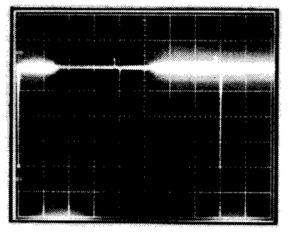
[IC504]

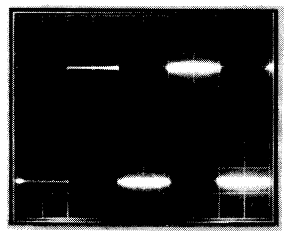

㊱PIN①, ②REC/PLAY
0.2V/10msec. div.

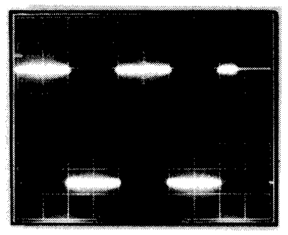

㊲PIN③REC/PLAY
2V/10msec. div.

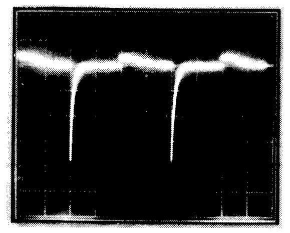

㊳PIN④REC/PLAY
2V/10msec. div.


㊴PIN⑥REC/PLAY
2V/10msec. div.

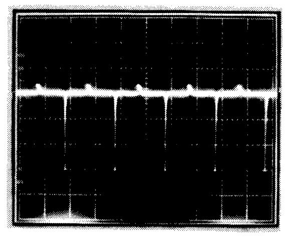

㊵PIN⑧REC/PLAY
2V/10msec. div.

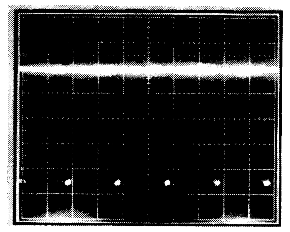

㊶PIN⑨REC
2V/10msec. div.

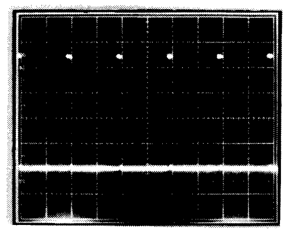

㊷PIN⑩REC/PLAY
2V/10msec. div.

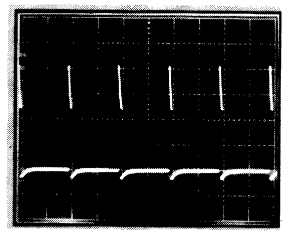

㊸PIN⑬REC/PLAY
2V/10msec. div.

[IC505]

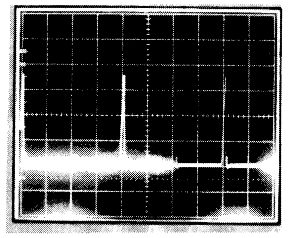

㊹PIN①REC/PLAY
2V/1msec. div.

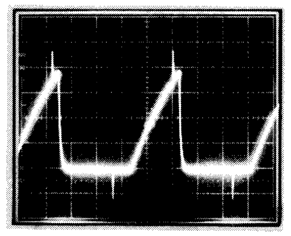

㊺PIN②, ④REC/PLAY
2V/1msec. div.

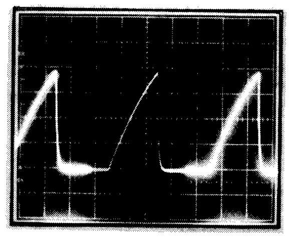

㊻PIN③REC/PLAY
2V/1msec. div.

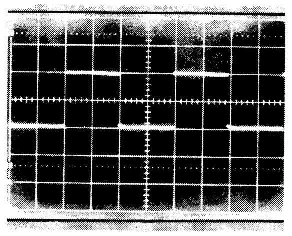

㊼PIN⑤, ⑥REC/PLAY
2V/1msec. div.

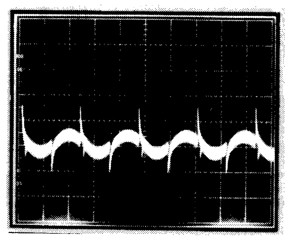
[TEST PLUG AND TEST POINTS]

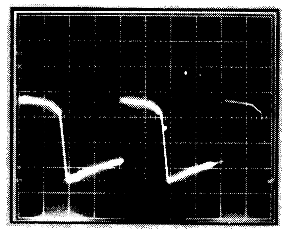

㊽TP501 REC/PLAY
1V/10msec. div.

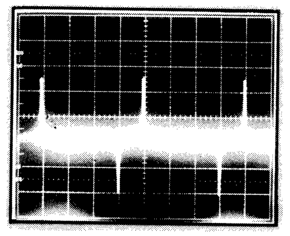

㊾TP502 REC
1V/10msec. div.

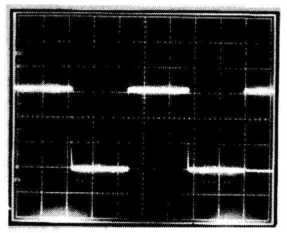

㊿TP502 PLAY
1V/10msec. div.

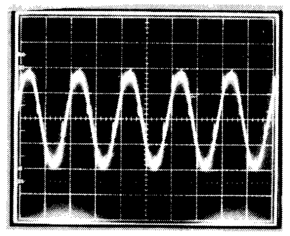

(51)TP503 REC/PLAY
1V/10msec. div.

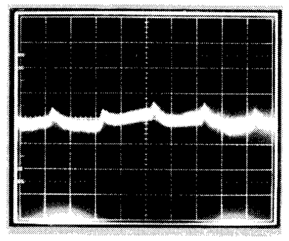

(52)TP505 REC/PLAY
50mV/0.1msec. div.

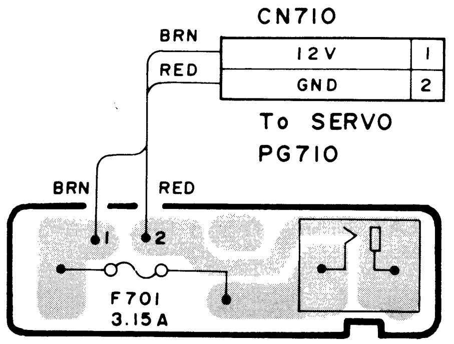

(53)TP508 REC
2V/10msec. div.


(54)TP508 PLAY
0.5V/10msec. div.


(55)TP509 REC/PLAY
0.2V/0.2msec. div.


(56)PG504-1 REC/PLAY
0.5V/5msec. div.

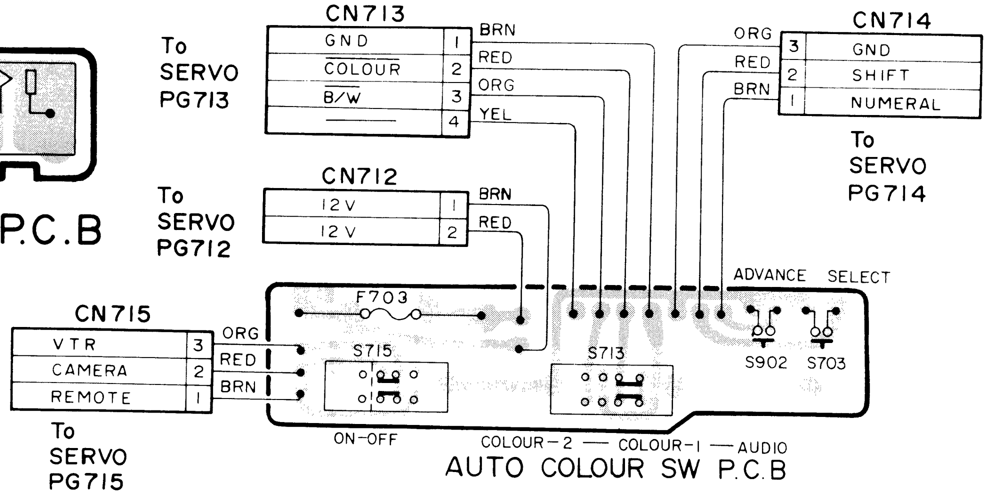

(57)PG504-5 REC/PLAY
50mV/5msec. div.


BRN
RED
F701
3.15A

CN710	
12V	1
GND	2

To SERVO PG710

INT. BATTERY P.C.B


F703
S715
S713
S902
S703
ADVANCE
SELECT
ON-OFF
COLOUR-2 — COLOUR-1 —AUDIO

CN713		
GND	1	BRN
COLOUR	2	RED
B/W	3	ORG
	4	YEL

To SERVO PG713

CN712		
12V	1	BRN
12V	2	RED

To SERVO PG712

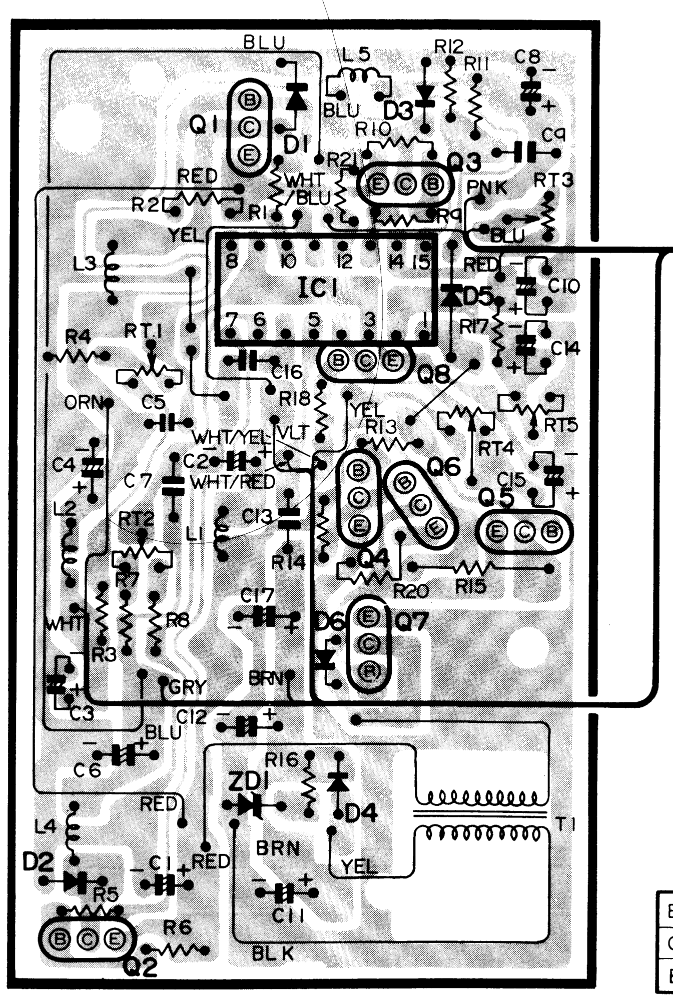
CN714		
ORG	3	GND
RED	2	SHIFT
BRN	1	NUMERAL

To SERVO PG714

CN715		
VTR	3	ORG
CAMERA	2	RED
REMOTE	1	BRN

To SERVO PG715

AUTO COLOUR SW P.C.B


BLU
L5
R12
R11
C8
Q1
BLU
D3
D1
R10
C9
R21
Q3
RED
WHT/BLU
PNK
RT3
R2
R1
R9
YEL
BLU
L3
IC1
RED
C10
D5
R17
C14
R4
RT1
C16
Q8
ORN
C5
R18
VLT
YEL
R13
RT5
WHT/YEL
RT4
C4
C2
Q6
C7
WHT/RED
C15
Q5
L2
RT2
L1
C13
R7
R14
Q4
R15
WHT
R8
C17
R20
D6
Q7
R3
GRY
BRN
C3
C12
BLU
C6
R16
ZD1
D4
T1
RED
L4
BRN
D2
C1
RED
YEL
R5
C11
R6
Q2
BLK

SWITCHING REGULATOR P.C.B

	CN706	
BRN	1	B+(CAPST)
RED	2	FB(CAPST)
ORN	3	M9V
YEL	4	B+FB
PNK	5	B+(CYL)
BLU	6	FB(CYL)
VLT	7	12V
GRY	8	5V
WHT	9	9V
	10	—
WHT/RED	11	SLOW ADJ.
WHT/YEL	12	SEARCH, SLOW
WHT/BLU	13	SAVE

To SERVO PG706

IC1

1	0.37 (0.37)	16	2.9 (2.9)
2	0 (0)	15	0 (0)
3	0 (0)	14	4.7 (4.7)
4	3.0 (3.0)	13	4.1 (4.1)
5	1.9 (1.9)	12	11.5 (11.5)
6	2.7 (2.7)	11	3.5 (3.5)
7	3.1 (3.1)	10	0 (0)
8	6.5 (6.5)	9	3.1 (3.1)

Q1

E	11.8 (11.8)
C	9.2 (9.2)
B	11.2 (11.2)

Q2

E	11.5 (11.5)
C	5.2 (5.2)
B	11.0 (11.0)

Q3

E	11.5 (11.5)
C	8.1 (8.1)
B	11.0 (11.0)

Q4

E	0 (0)
C	0.58 (0.58)
B	0.25 (0.25)

Q5

E	0.1 (0.1)
C	11.5 (11.5)
B	0.37 (0.37)

Q6

E	0 (0)
C	0.1 (0.1)
B	0.58 (0.58)

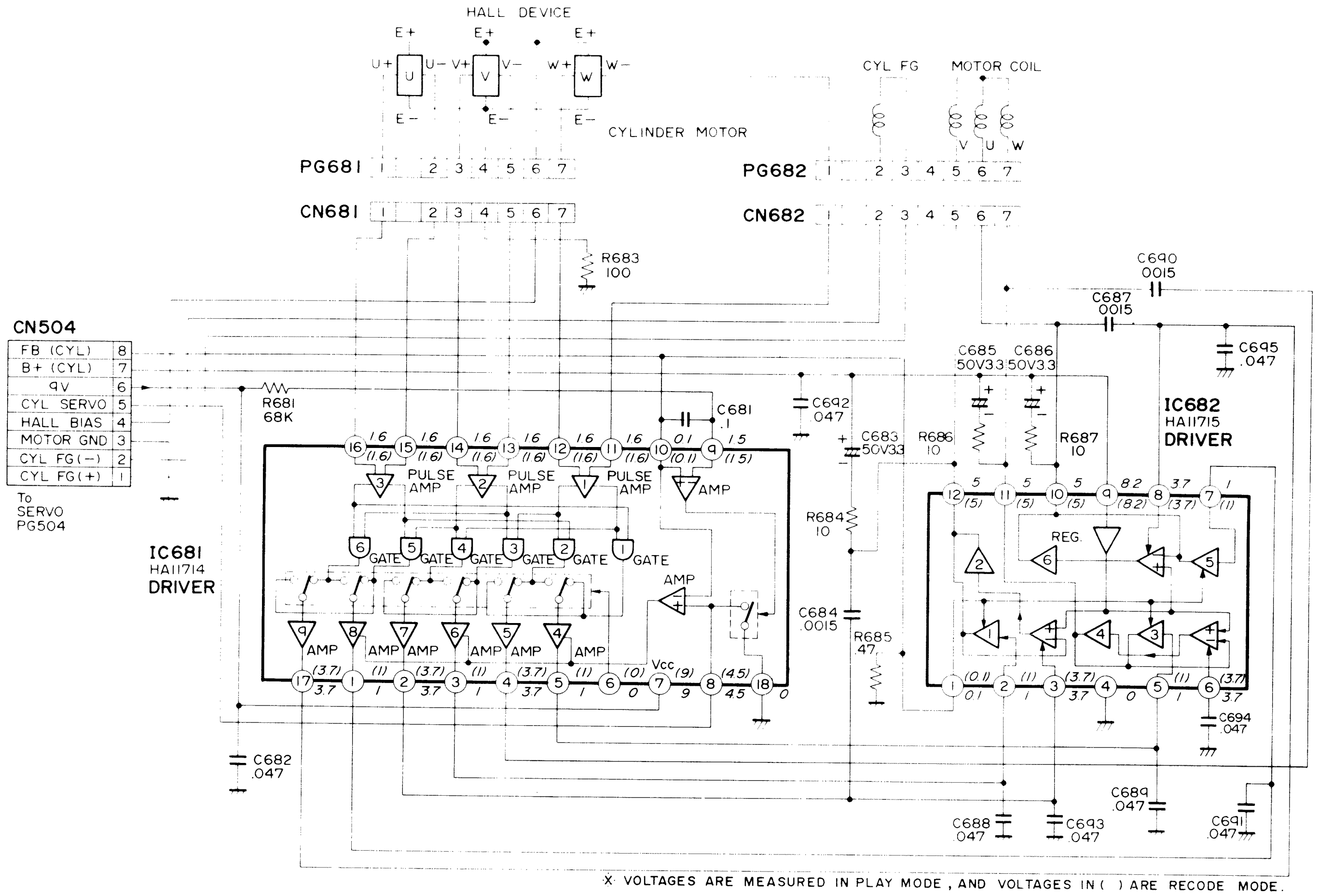
Q7

E	0 (0)
C	11.6 (11.6)
B	0.1 (0.1)

Q8

E	0 (0)
C	3.0 (3.0)
B	0.2 (0.2)

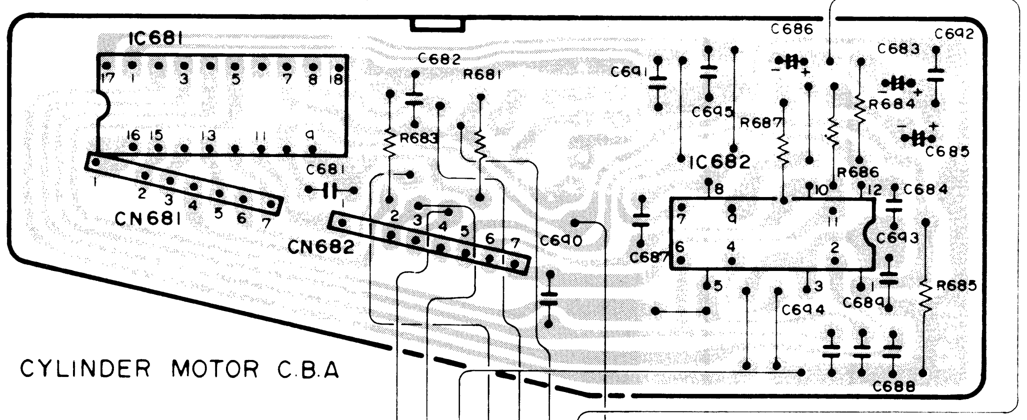
CYLINDER MOTOR


HALL DEVICE
E+
U+
U-
V+
V-
W+
W-
E-
CYLINDER MOTOR
CYL FG
MOTOR COIL
PG681
CN681
PG682
CN682
R683
100
C690
.0015
C687
.0015
C695
.047
CN504
FB (CYL) 8
B+ (CYL) 7
9V 6
CYL SERVO 5
HALL BIAS 4
MOTOR GND 3
CYL FG(−) 2
CYL FG(+) 1
To SERVO PG504
R681
68K
C681
.1
C692
.047
C683
50V33
C685
50V33
C686
50V33
R686
10
R687
10
IC682
HA11715
DRIVER
IC681
HA11714
DRIVER
PULSE AMP
GATE
AMP
REG
R684
10
C684
.0015
R685
47
Vcc
C682
.047
C694
.047
C689
.047
C688
.047
C693
.047
C691
.047

X VOLTAGES ARE MEASURED IN PLAY MODE , AND VOLTAGES IN ( ) ARE RECODE MODE.

IC681

17	1	2	3	4	5	6	7	8	18
3.7	1.0	3.7	1.0	3.7	1.0	0	9.0	4.5	0
	16	15	14	13	12	11	10	9	
	1.6	1.6	1.6	1.6	1.6	1.6	0.1	1.5	


IC681
C686
C683
C692
C682
R681
C691
C695
R687
R684
R683
IC682
C685
R686
C681
C684
CN681
CN682
C690
C693
C687
R685
C694
C689
C688

CYLINDER MOTOR C.B.A

CN681	
1	U+
2	U−
3	V+
4	E−
5	V−
6	E+
7	W+

To CYLINDER MOTOR PG681

CN682	
1	W−
2	FG(−)
3	FG(+)
4	—
5	V
6	U
7	W

To CYLINDER MOTOR PG682

	CN504	
GRY	8	FB (CYL)
VLT	7	B+ (CYL)
BLU	6	9V
PNK	5	CYL SERVO
YEL	4	HALL BIAS
ORN	3	MOTOR GND
RED	2	CYL FG (−)
BRN	1	CYL FG (+)

To SERVO PG504

IC682

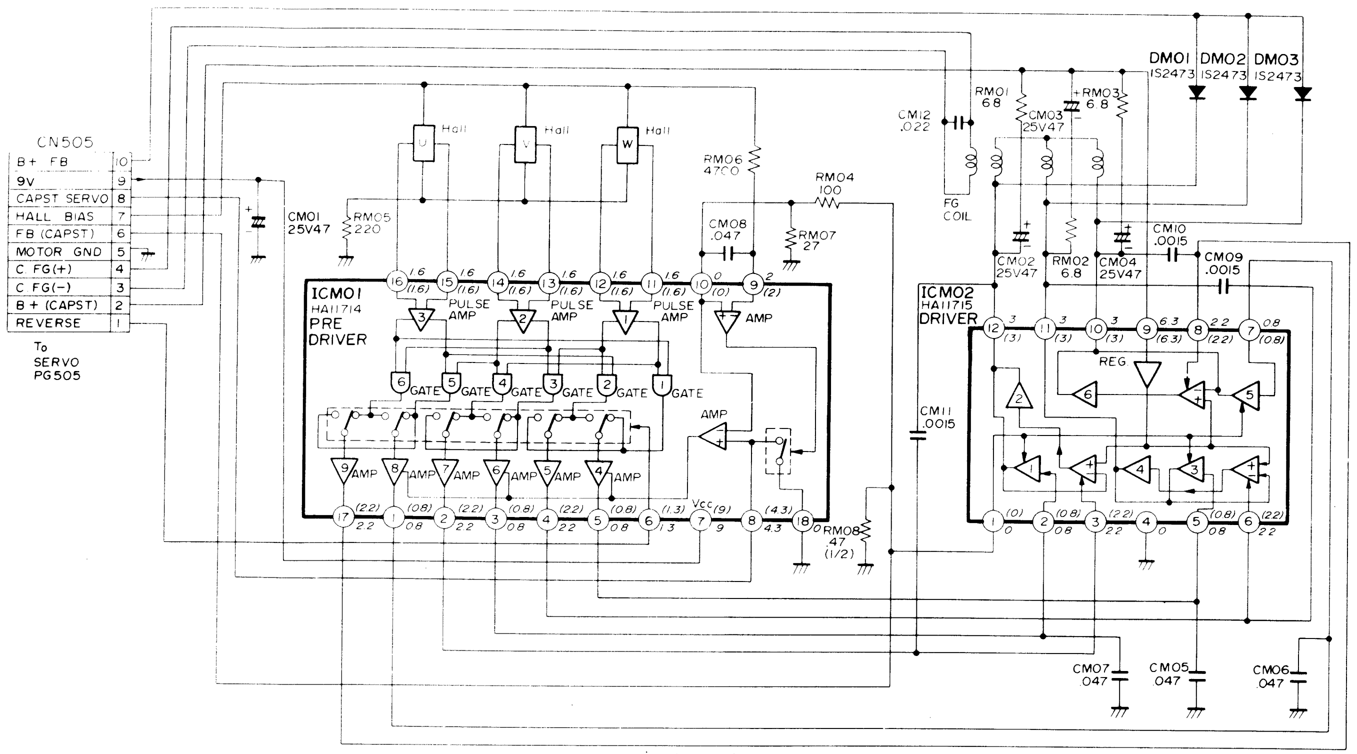
7	8	9	10	11	12
1.0	3.7	8.2	5.0	5.0	5.0
6	5	4	3	2	1
3.7	1.0	0	3.7	1.0	0.1

CAPSTA

CN505
B+ FB
9V
CAPST SERVO
HALL BIAS
FB (CAPST)
MOTOR GND
C FG(+)
C FG(−)
B+ (CAPST)
REVERSE
To SERVO PG505

CAPSTAN MOTOR

695
047


CN505
B+ FB 10
9V 9
CAPST SERVO 8
HALL BIAS 7
FB (CAPST) 6
MOTOR GND 5
C FG(+) 4
C FG(−) 3
B + (CAPST) 2
REVERSE 1
To SERVO PG505
CM01 25V47
RM05 220
Hall
U
V
W
RM06 4700
RM04 100
RM07 27
CM08 .047
ICM01 HA11714 PRE DRIVER
PULSE AMP
AMP
GATE
Vcc
RM08 .47 (1/2)
CM12 .022
RM01 6.8
CM03 25V47
RM03 6.8
FG COIL
DM01 1S2473
DM02 1S2473
DM03 1S2473
CM02 25V47
RM02 6.8
CM04 25V47
CM10 .0015
CM09 .0015
CM11 .0015
ICM02 HA11715 DRIVER
REG.
CM07 .047
CM05 .047
CM06 .047

※ VOLTAGES ARE MEASURED IN PLAY MODE, AND VOLTAGES IN ( ) ARE RECORD MODE.

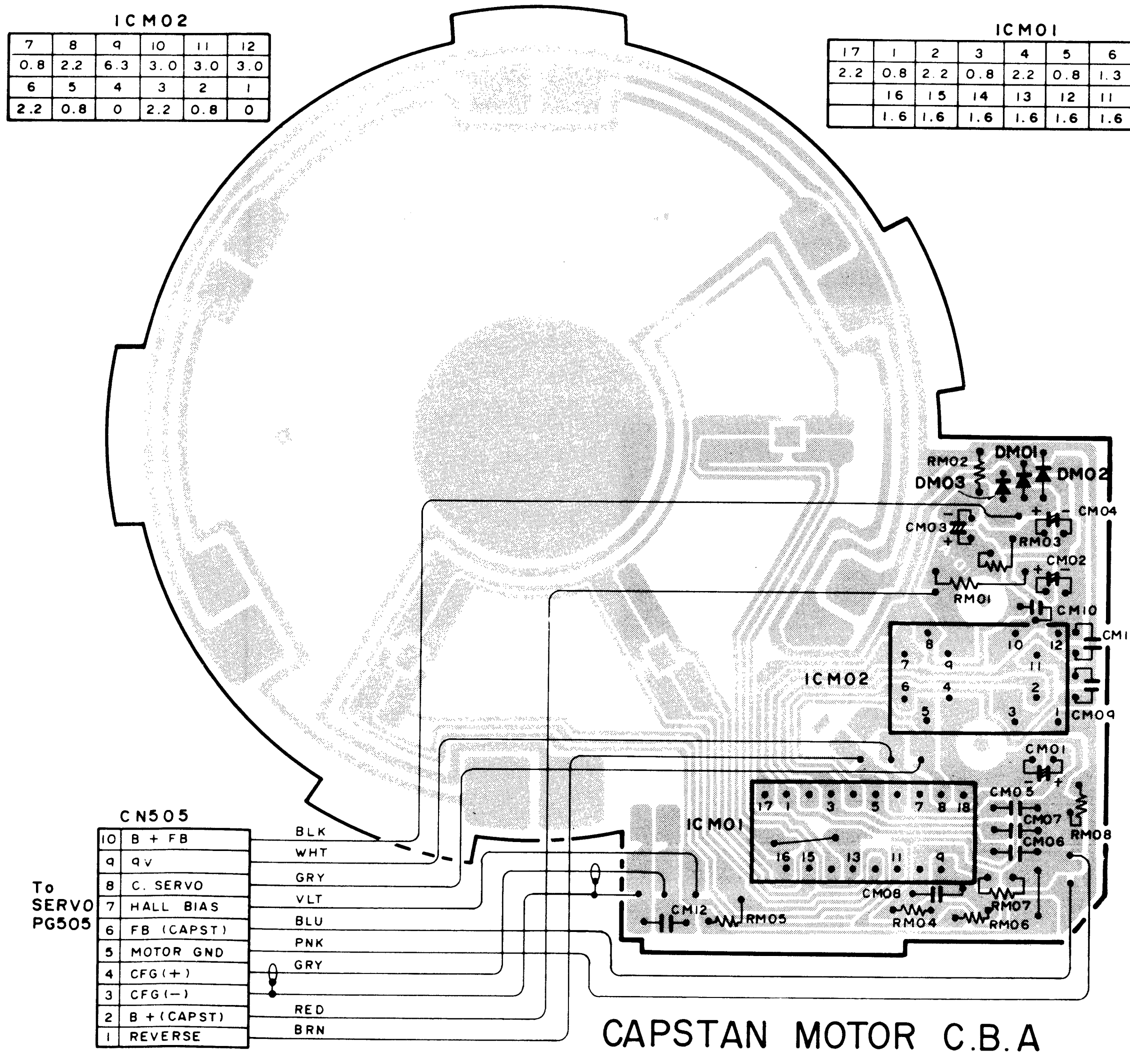
ODE.

ICM02

7	8	9	10	11	12
0.8	2.2	6.3	3.0	3.0	3.0
6	5	4	3	2	1
2.2	0.8	0	2.2	0.8	0

ICM01

17	1	2	3	4	5	6	7	8	18
2.2	0.8	2.2	0.8	2.2	0.8	1.3	9.0	4.3	0
	16	15	14	13	12	11	10	9	
	1.6	1.6	1.6	1.6	1.6	1.6	0	2.0	


DM01
DM02
DM03
RM02
CM04
CM03
RM03
CM02
RM01
CM10
CM11
ICM02
CM09
CM01
CM05
CM07
CM06
RM08
ICM01
CM08
CM12
RM05
RM04
RM07
RM06
CN505
10 B + FB
9 9V
8 C. SERVO
7 HALL BIAS
6 FB (CAPST)
5 MOTOR GND
4 CFG(+)
3 CFG(−)
2 B +(CAPST)
1 REVERSE
To SERVO PG505
BLK
WHT
GRY
VLT
BLU
PNK
GRY
RED
BRN

CAPSTAN MOTOR C.B.A

12
5.0
1
0.1

IC501

15	16	17	18	19	20	21	22	23	24	25	26	27	28
3.6(5.8)	8.9(8.9)	4.0(4.0)	4.0(4.0)	6.5(6.5)	4.2(4.2)	1.4(1.4)	5.7(5.7)	5.2(5.2)	8.3(2.2)	2.2(2.2)	0.1(3.1)	1.9(1.9)	0(0)
14	13	12	11	10	9	8	7	6	5	4	3	2	1
3.5(3.2)	3.5(5.0)	0(0)	0(0)	2.1(2.1)	0(0)	1.8(1.8)	2.6(2.6)	4.0(4.0)	2.8(2.8)	5.2(5.2)	1.8(1.8)	0(0)	0.9(0.9)

IC502

12	13	14	15	16	17	18	19	20	21	22
0(2.1)	0.1(0.1)	1.3(1.3)	0.4(0.4)	0.9(0.9)	6.1(6.1)	4.3(4.3)	4.2(4.2)	0(0)	4.4(4.4)	8.2(8.2)
11	10	9	8	7	6	5	4	3	2	1
0(0)	0.2(1.6)	0(3.7)	0(0)	0(0)	0.1(0.1)	0.6(0.6)	0(0)	0.2(0.2)	0(0)	0(0)

IC506

1	3.5(3.5)
2	5.0(5.4)
3	4.2(4.2)
4	0(0)
5	1.7(5.2)
6	1.0(5.1)
7	4.3(4.8)
8	0(0)
9	1.0(1.0)
10	8.9(8.9)
11	0(0)
12	8.9(8.9)
13	8.9(8.9)
14	9.0(9.0)

IC701

10	9	8	7	6	5	4	3	2	1
8.2(9.0)	9.0(8.2)	8.7(0)	0(0.1)	0(0)	11.3(11.3)	11.5(11.5)	11.5(11.5)	0.1(0.1)	9.0(9.0)

IC704

12	11	10	9	8	7	6	5	4	3	2	1
9.0(9.0)	0(0)	8.3(0.4)	4.6(0.4)	6.3(0)	0.5(0.5)	0(0)	4.5(2.5)	3.1(3.1)	3.2(3.2)	0(0)	3.9(3.9)

IC702

14	13	12	11	10	9	8	7	6	5	4	3	2	1
9.0(9.0)	4.5(4.5)	0(0)	4.5(4.5)	0(0)	4.5(4.5)	4.5(4.5)	4.4(4.4)	4.4(4.4)	4.5(4.5)	9.0(0)	7.1(0)	0(0)	6.3(0)

IC741

9	10	11	12	13	14	15	16
5.0(5.0)	2.4(2.4)	2(2)	5.0(5.0)	0.5(0.5)	5.0(5.0)	0(0)	0(0)
8	7	6	5	4	3	2	1
0(0)	——	0(0)	——	——	5.0(5.0)	5.0(5.0)	4.6(0.4)

	Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508
B	4.4	4.4	1.8	1.7	0	4.5	0	0
C	4.7	4.7	4.5	9	2.6	9	8.7	0
E	9	9	1.3	2.6	0	4.2	0	—

	Q509	Q512	Q513	Q514	Q515	Q516	Q517	Q518
B	0	0.6	9	2.7	0.1(0.1)	0 (9)	0	0
C	4.3	0	0	5	8.3(2.1)	0 (0)	0	0
E	0	0	9	2.5	0 (0)	0 (0)	0	0

	Q519	Q520	Q521	Q522	Q524	Q525	Q530	Q531
B	0.6	0	0	0	2.4	0	0	0
C	0	8.3	0	4.6	1.8	2.4	0	0
E	0	0	0	0	1.8	0	0	0

	Q691	Q705	Q707	Q708	Q709	Q712	Q750	Q751
B	1.5	0	8.9(8.2)	8.2(8.9)	0.6	4.0(3.8)	11.3	0.6
C	3.7	9	0 (8.9)	8.9(8.9)	3.7	9.0 9.0	11.3	0
E	1.2	0	8.9(8.9)	8.9(8.9)	0	4.5(3.1)	12	0

PG710

1	12V
2	GND

To
INT. BATT.
CN710

PG711

1	15V/12V
2	15V/12V

F701
3.15A

PG712

1	12V
2	12V

To
AUTO COLOUR
CN712

PG713

1	GND
2	$\overline{\text{COLOUR}}$
3	$\overline{\text{B/W}}$
4	———

To
AUTO COLOUR
CN713

PG714

1	NUNERAL
2	SHIFT
3	GND

To
AUTO COLOUR
CN714

PG715

1	REMOTE
2	CAMERA
3	VTR

To
AUTO COLOUR
CN715

PG705A

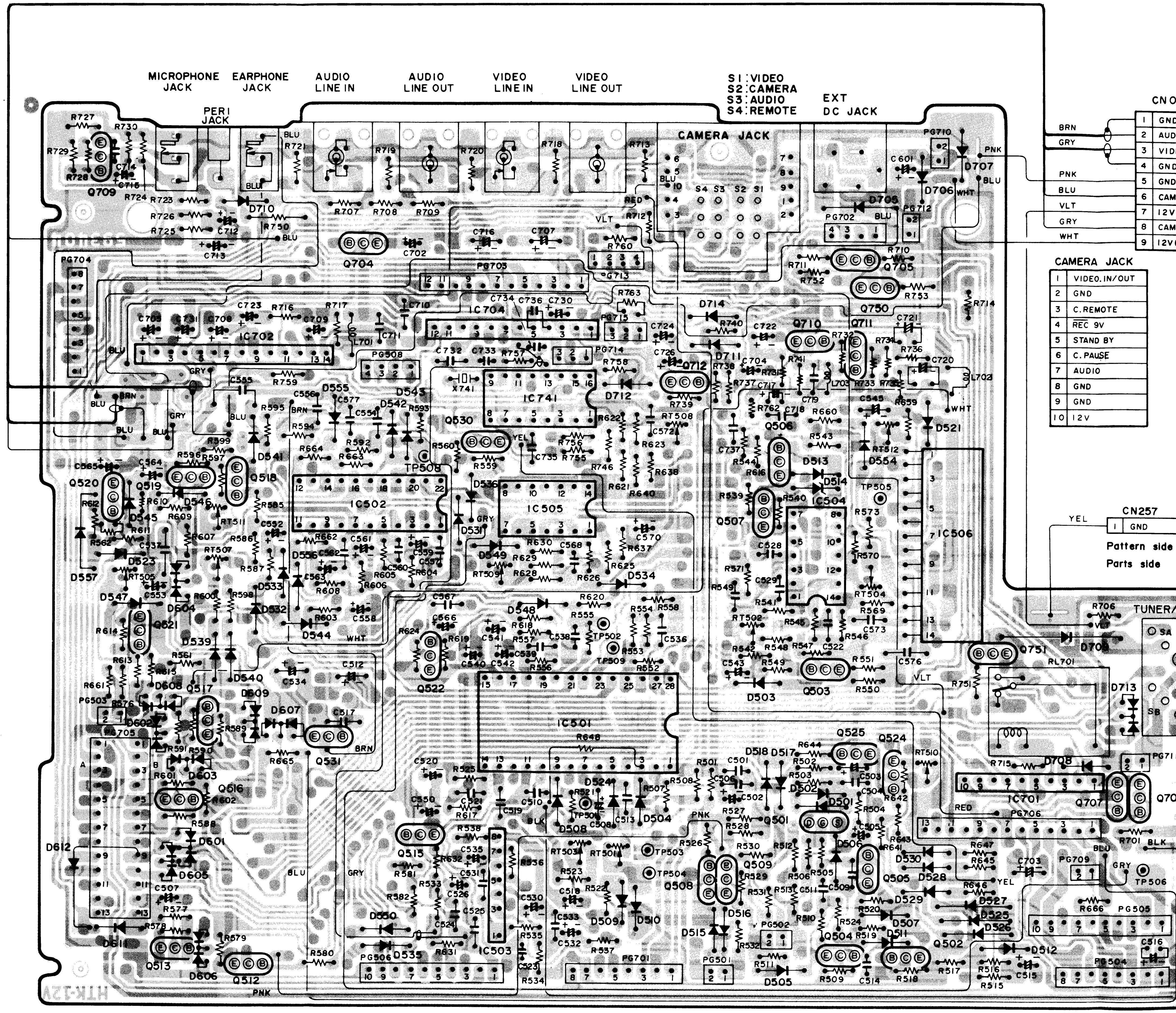
1	5V	2
2	12V	3
3	TIME ON	4
4	GND	5
5	12V (AC)	6
6	PLAY	7
7	REC	8
8	$\overline{\text{SPEED PLAY}}$	9
9	$\overline{\text{MUTE}}$	10
10	9V	11
11	CYL LOCK	12
12	$\overline{\text{SAVE}}$	13
13	———	1

To
SYSTEM
CONTROL
PG801A
VIA
CN7851

PG705B

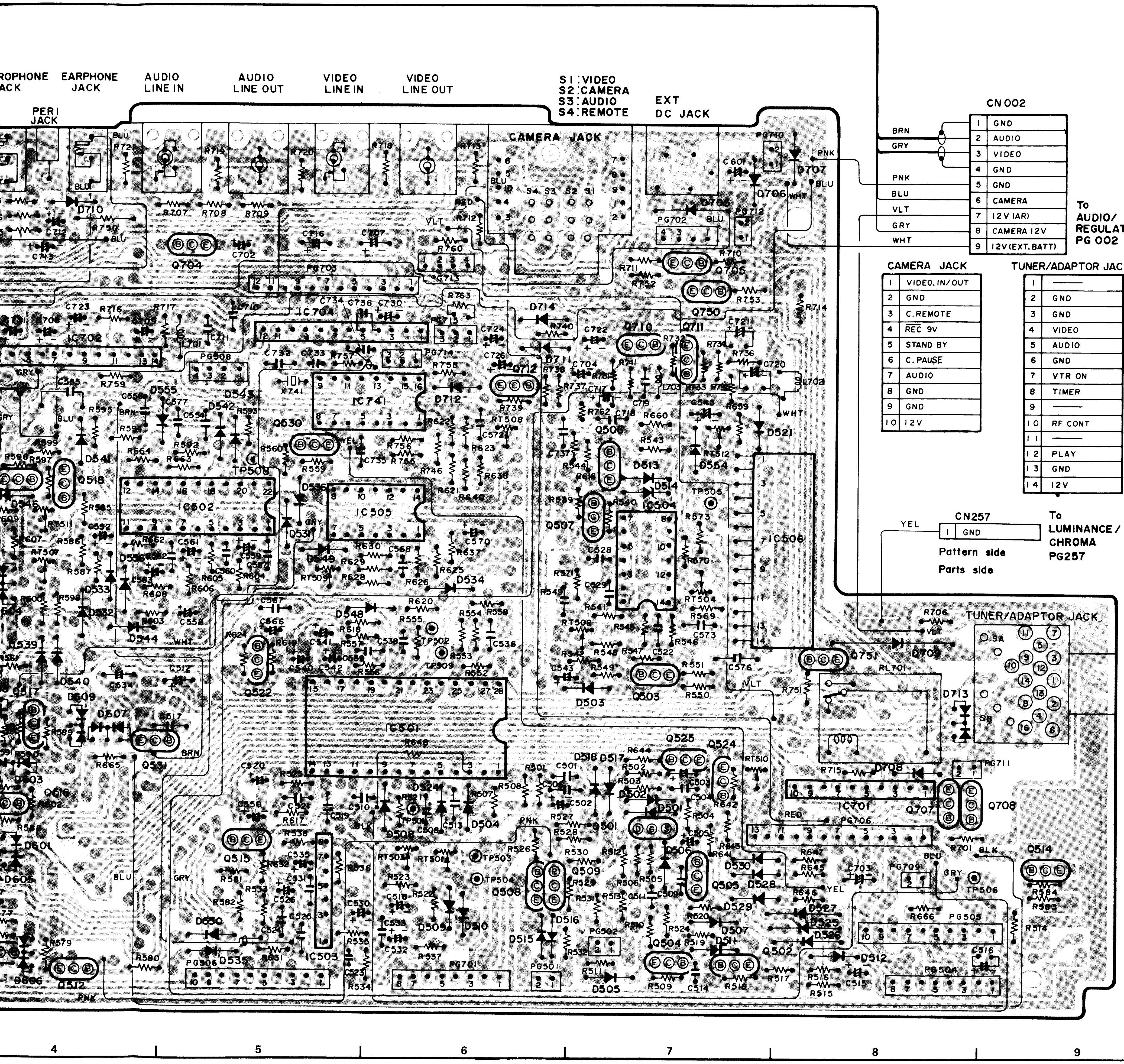
1	POWER SW ON
2	REMOTE POWER
3	———
4	SLOW
5	FRAME ADV
6	SEARCH
7	REC / DUB
8	PB / DUB
9	PAUSE
10	LOAD
11	REVERSE
12	CYL ON
13	OSC STOP

To
SYSTEM
CONTROL
PG801B
VIA
CN7851


MICROPHONE JACK
EARPHONE JACK
AUDIO LINE IN
AUDIO LINE OUT
VIDEO LINE IN
VIDEO LINE OUT
S1:VIDEO
S2:CAMERA
S3:AUDIO
S4:REMOTE
EXT DC JACK
PERI JACK
CAMERA JACK
S4 S3 S2 S1
IC501
IC502
IC503
IC504
IC505
IC506
IC701
IC702
IC704
IC741
TUNER/
HTK-12V
CN0
1 GND
2 AUD
3 VID
4 GND
5 GND
6 CAM
7 12V
8 CAM
9 12V
BRN
GRY
PNK
BLU
VLT
WHT
YEL
CN257
1 GND
Pattern side
Parts side

CAMERA JACK

1	VIDEO. IN/OUT
2	GND
3	C. REMOTE
4	$\overline{\text{REC}}$ 9V
5	STAND BY
6	C. PAUSE
7	AUDIO
8	GND
9	GND
10	12V


ROPHONE
ACK
EARPHONE JACK
PERI JACK
AUDIO LINE IN
AUDIO LINE OUT
VIDEO LINE IN
VIDEO LINE OUT
S1:VIDEO
S2:CAMERA
S3:AUDIO
S4:REMOTE
EXT DC JACK
CAMERA JACK
TUNER/ADAPTOR JACK
BRN
GRY
PNK
BLU
VLT
GRY
WHT
YEL
IC502
IC505
IC501
IC503
IC504
IC506
IC701
IC702
IC704
IC741
RL701
4
5
6
7
8
9
10
11

CN 002

1	GND
2	AUDIO
3	VIDEO
4	GND
5	GND
6	CAMERA
7	12V (AR)
8	CAMERA 12V
9	12V(EXT. BATT)

To
AUDIO/
REGULATOR
PG 002

CAMERA JACK

1	VIDEO. IN/OUT
2	GND
3	C.REMOTE
4	$\overline{\text{REC}}$ 9V
5	STAND BY
6	C. PAUSE
7	AUDIO
8	GND
9	GND
10	12V

TUNER/ADAPTOR JACK

1	———
2	GND
3	GND
4	VIDEO
5	AUDIO
6	GND
7	VTR ON
8	TIMER
9	———
10	RF CONT
11	———
12	PLAY
13	GND
14	12V

CN257

1	GND

To
LUMINANCE/
CHROMA
PG257

Pattern side
Parts side

PG501

1	CONTROL PULSE
2	GND

To
CONTROL HEAD
CN501

PG502

1	TACH PULSE
2	GND

To
TACH HEAD
CN502

PG503

2	9V
1	TRACKING

To
TRACKING
VOLUME
CN503

PG504

8	FB (CYL)
7	+B (CYL)
6	9V
5	CYL SERVO
4	HALL BIAS
3	MOTOR GND
2	CYL FG(−)
1	CYL FG(+)

To
CYLINDER
MOTOR
CN504

PG505

10	+B FB
9	9V
8	C. SERVO
7	HALL BIAS
6	FB (CAPST)
5	MOTOR GND
4	CFG (+)
3	CFG (−)
2	+B (CAPST)
1	REVERSE

To
CAPSTAN
MOTOR
CN505

PG506

10	INSERT
9	4·43 MHz
8	$\overline{\text{B/W}}$
7	$\overline{\text{COLOUR}}$
6	REC START
5	SW 25
4	SYNC
3	MONITOR CUT
2	$\overline{\text{SPEED PLAY}}$
1	GND

To
LUMINANCE/
CHROMA
PG203
VIA
CN2536

PG508

1	SLOW TRACKING
2	REMOTE
3	GND
4	VAR. SLOW

To
JACK
CN508

PG702

1	VIDEO
2	GND
3	AUDIO
4	9V

To
RF CONVERTOR
PG001

PG701

8	5V
7	9V
6	REC 9V
5	PB 9V
4	GND
3	VIDEO
2	GND
1	VIDEO

To
LUMINANCE/
CHROMA
PG202
VIA
CN2721

PG703

1	CYL FG
2	OSC STOP
3	REC 9V
4	———
5	S ON S
6	$\overline{\text{MUTE}}$
7	PLAY
8	9V
9	GND
10	AUDIO
11	GND
12	AUDIO

To
AUDIO
PG401
VIA
CN4713

PG704

8	$\overline{\text{DATE}}$
7	INSERT
6	S ON S
5	GND
4	REMOTE
3	STAND-BY
2	CAMERA
1	$\overline{\text{C. PAUSE}}$

To
SYSTEM
CONTROL
PG803
VIA
CN7843

PG706

1	+B (CAPST)
2	FB (CAPST)
3	M 9V
4	+B FB
5	+B (CYL)
6	FB (CYL)
7	12V
8	5V
9	9V
10	———
11	SLOW ADJ
12	SEARCH SLOW, STILL
13	$\overline{\text{SAVE}}$

To
SWITCHING
REGULATOR
CN706

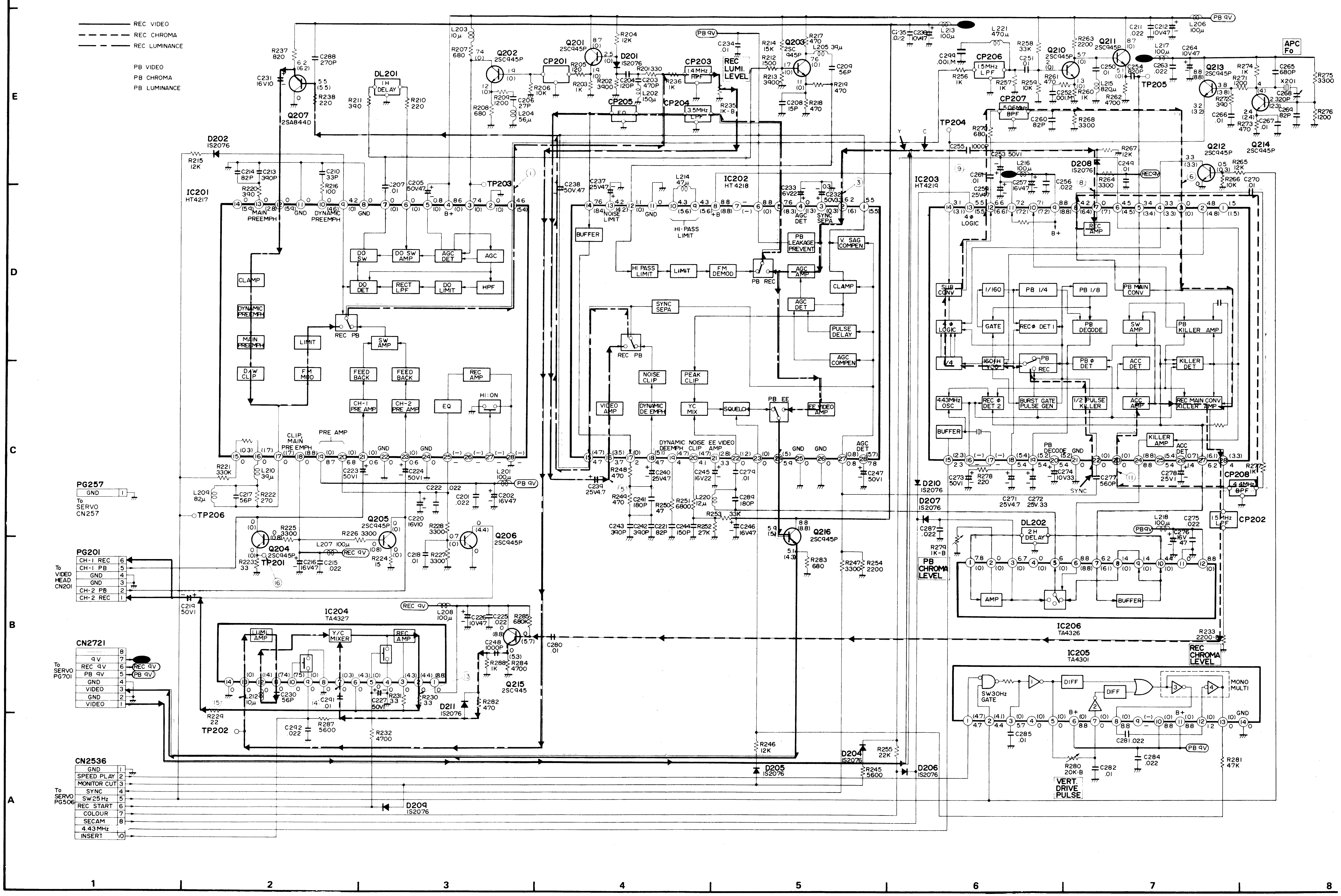
PG709

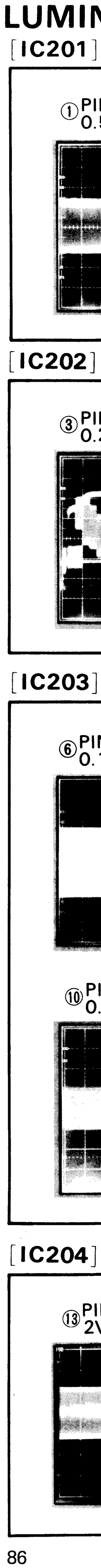
1	GND
2	M9V

To
LOADING MOTOR
DRIVE
PG902
VIA
CN7992

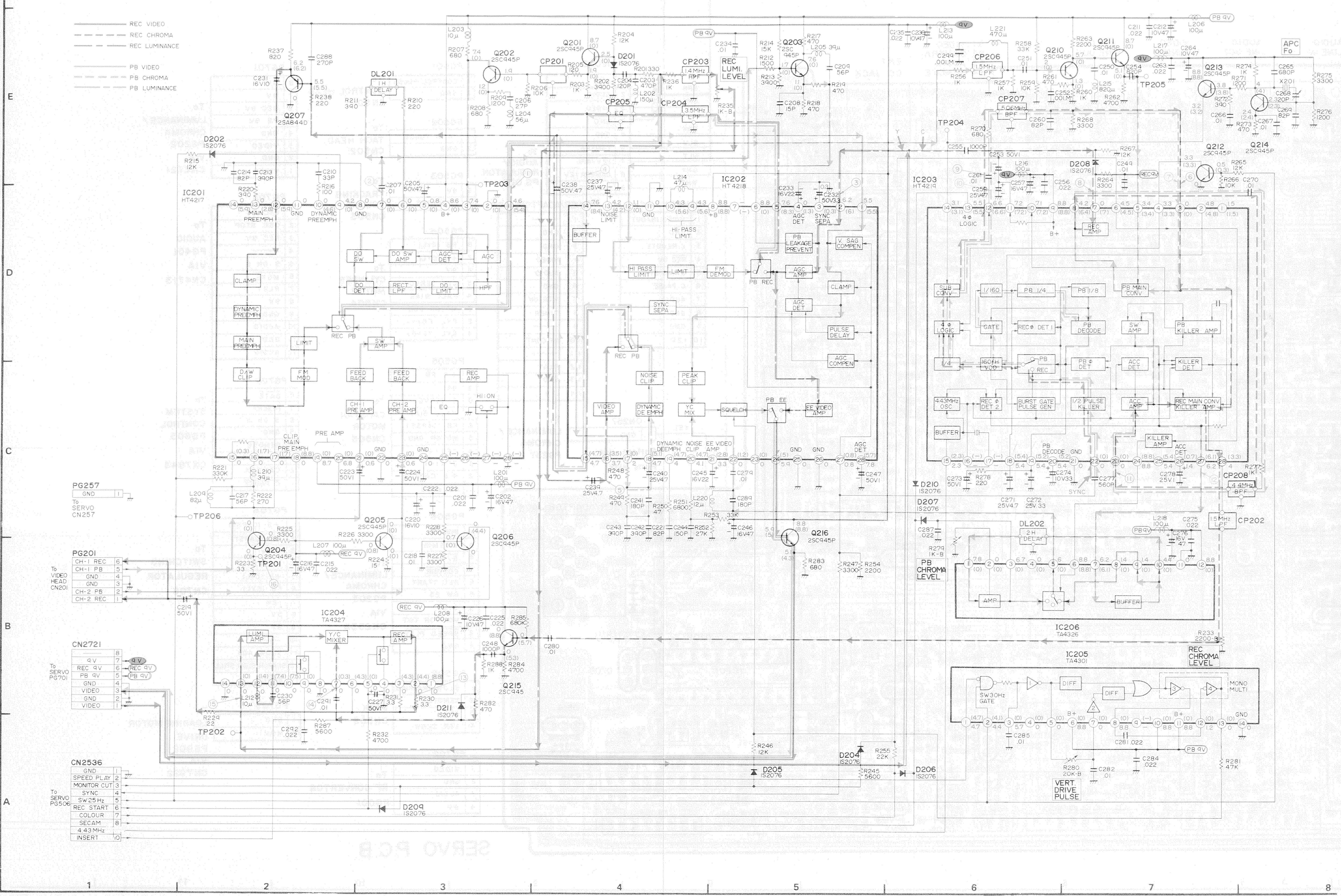
SERVO P.C.B

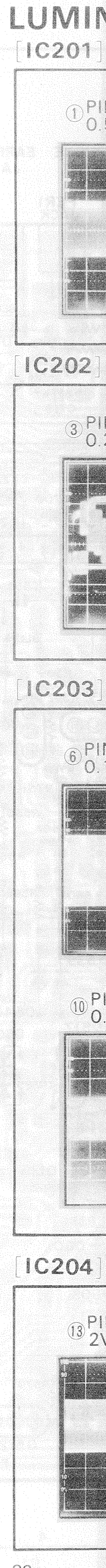
LUMINANCE/CHROMA

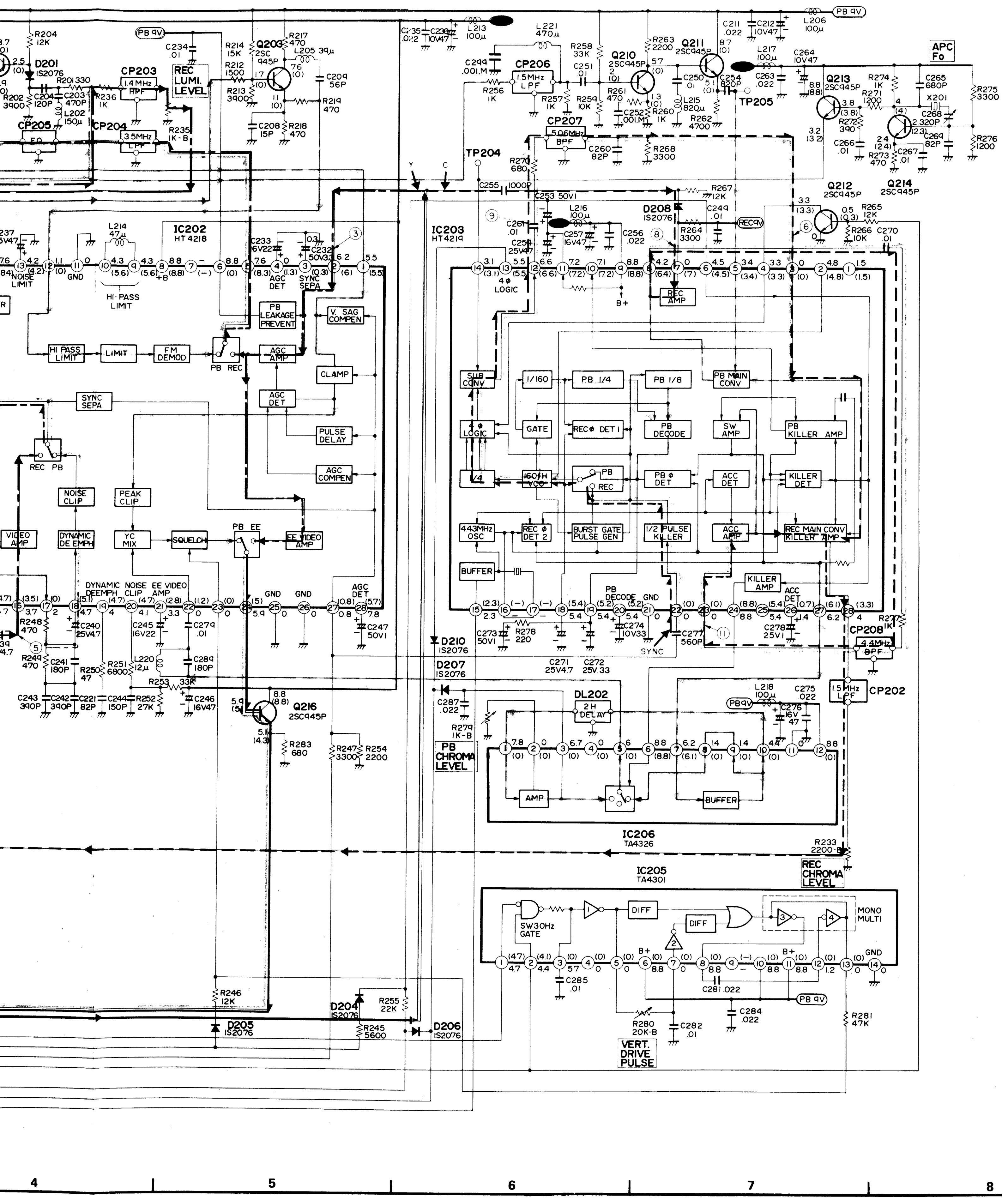

REC VIDEO
REC CHROMA
REC LUMINANCE
PB VIDEO
PB CHROMA
PB LUMINANCE
Q207 2SA844D
Q202 2SC945P
Q201 2SC945P
D201 1S2076
CP201
CP203 1.4MHz HPF
CP204 3.5MHz LPF
CP205 EQ
REC LUMI. LEVEL
Q203 2SC945P
PB 9V
L213 100μ
L221 470μ
CP206 1.5MHz LPF
CP207 5.06MHz BPF
Q210 2SC945P
Q211 2SC945P
L206 100μ
APC Fo
Q213 2SC945P
Q214 2SC945P
X201
TP205
TP204
DL201 1H DELAY
D202 1S2076
IC201 HT4217
TP203
MAIN PREEMPH
DYNAMIC PREEMPH
GND
B+
DO SW
DO SW AMP
AGC DET
AGC
DO DET
RECT LPF
DO LIMIT
HPF
CLAMP
DYNAMIC PREEMPH
MAIN PREEMPH
D/W CLIP
LIMIT
FM MOD
REC PB
SW AMP
FEED BACK
CH-1 PRE AMP
CH-2 PRE AMP
EQ
REC AMP
HI: ON
CLIP, MAIN PRE EMPH
PRE AMP
IC202 HT4218
BUFFER
NOISE LIMIT
HI-PASS LIMIT
AGC DET
SYNC SEPA
PB LEAKAGE PREVENT
V. SAG COMPEN
HI PASS LIMIT
FM DEMOD
PB REC
AGC AMP
CLAMP
SYNC SEPA
PULSE DELAY
AGC COMPEN
NOISE CLIP
PEAK CLIP
VIDEO AMP
DYNAMIC DE EMPH
YC MIX
SQUELCH
PB EE
EE VIDEO AMP
DYNAMIC DEEMPH
NOISE CLIP
EE VIDEO AMP
AGC DET
Q216 2SC945P
D208 1S2076
Q212 2SC945P
REC 9V
IC203 HT4219
4φ LOGIC
REC AMP
SUB CONV
1/160
PB 1/4
PB 1/8
PB MAIN CONV
4φ LOGIC
GATE
RECφ DET 1
PB DECODE
SW AMP
PB KILLER AMP
1/4
160fH VCO
PB REC
PB φ DET
ACC DET
KILLER DET
443MHz OSC
REC φ DET 2
BURST GATE PULSE GEN
1/2 PULSE KILLER
ACC AMP
REC MAIN CONV KILLER AMP
BUFFER
KILLER AMP
ACC DET
PB DECODE OUT
SYNC
CP208 4.4MHz BPF
CP202 1.5MHz LPF
D210 1S2076
D207 1S2076
DL202 2H DELAY
PB CHROMA LEVEL
AMP
BUFFER
IC206 TA4326
REC CHROMA LEVEL
IC205 TA4301
SW30Hz GATE
DIFF
MONO MULTI
VERT. DRIVE PULSE
PG257
GND
To SERVO CN257
TP206
IC201
Q205 2SC945P
Q204 2SC945P
Q206 2SC945P
TP201
PG201
CH-1 REC
CH-1 PB
GND
GND
CH-2 PB
CH-2 REC
To VIDEO HEAD CN201
IC204 TA4327
LUMI AMP
Y/C MIXER
REC AMP
Q215 2SC945
D211 1S2076
CN2721
9V
REC 9V
PB 9V
GND
VIDEO
GND
VIDEO
To SERVO PG701
TP202
CN2536
GND
SPEED PLAY
MONITOR CUT
SYNC
SW25Hz
REC START
COLOUR
SECAM
4.43MHz
INSERT
To SERVO PG506
D209 1S2076
D205 1S2076
D204 1S2076
D206 1S2076
A
B
C
D
E
1
2
3
4
5
6
7
8


LUMIN
[IC201]
①PI
0.5
[IC202]
③PI
0.2
[IC203]
⑥PI
0.1
⑩PI
0.
[IC204]
⑬PI
2V

LUMINANCE/CHROMA

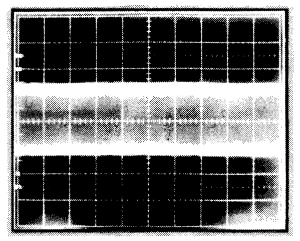

REC VIDEO
REC CHROMA
REC LUMINANCE
PB VIDEO
PB CHROMA
PB LUMINANCE
IC201 HT4217
IC202 HT4218
IC203 HT4219
IC204 TA4327
IC205 TA4301
IC206 TA4326
Q201 2SC945P
Q202 2SC945P
Q203 2SC945P
Q204 2SC945P
Q205 2SC945P
Q206 2SC945P
Q207 2SA844O
Q210 2SC945P
Q211 2SC945P
Q212 2SC945P
Q213 2SC945P
Q214 2SC945P
Q215 2SC945
Q216 2SC945P
D201 IS2076
D202 IS2076
D204 IS2076
D205 IS2076
D206 IS2076
D207 IS2076
D208 IS2076
D209 IS2076
D210 IS2076
D211 IS2076
DL201 1H DELAY
DL202 2H DELAY
CP201
CP202
CP203 1.4MHz BPF
CP204 3.5MHz LPF
CP205 EQ
CP206 1.5MHz LPF
CP207 5.06MHz BPF
CP208 4.4MHz BPF
REC LUMI. LEVEL
PB CHROMA LEVEL
REC CHROMA LEVEL
VERT DRIVE PULSE
APC Fo
TP201
TP202
TP203
TP204
TP205
TP206
MAIN PREEMPH
DYNAMIC PREEMPH
CLAMP
DYNAMIC PREEMPH
MAIN PREEMPH
D/W CLIP
DO SW
DO SW AMP
AGC DET
AGC
DO DET
RECT LPF
DO LIMIT
HPF
LIMIT
SW AMP
FM MOD
FEED BACK
REC AMP
CH-1 PRE AMP
CH-2 PRE AMP
EQ
HI ON
REC PB
CLIP, MAIN PRE EMPH
PRE AMP
BUFFER
NOISE LIMIT
HI PASS LIMIT
LIMIT
FM DEMOD
PB REC
PB LEAKAGE PREVENT
AGC AMP
AGC DET
SYNC SEPA
V. SAG COMPEN
CLAMP
PULSE DELAY
AGC COMPEN
NOISE CLIP
PEAK CLIP
VIDEO AMP
DYNAMIC DE EMPH
YC MIX
SQUELCH
PB EE
EE VIDEO AMP
DYNAMIC DEEMPH
NOISE CLIP
EE VIDEO AMP
AGC DET
4φ LOGIC
REC AMP
SUB CONV
1/160
PB 1/4
PB 1/8
PB MAIN CONV
GATE
REC φ DET 1
PB DECODE
SW AMP
PB KILLER AMP
1/4
160fH VCO
PB φ DET
ACC DET
KILLER DET
443MHz OSC
REC φ DET 2
BURST GATE PULSE GEN
1/2 PULSE KILLER
ACC AMP
REC MAIN CONV KILLER AMP
BUFFER
KILLER AMP
ACC DET
PB DECODE
SYNC
LUMI. AMP
Y/C MIXER
REC AMP
AMP
BUFFER
SW30Hz GATE
DIFF
DIFF
MONO MULTI
PG257
GND
To SERVO CN257
PG201
CH-1 REC
CH-1 PB
GND
GND
CH-2 PB
CH-2 REC
To VIDEO HEAD CN201
CN2721
9V
REC 9V
PB 9V
GND
VIDEO
GND
VIDEO
To SERVO PG701
CN2536
GND
SPEED PLAY
MONITOR CUT
SYNC
SW 25Hz
REC START
COLOUR
SECAM
4.43 MHz
INSERT
To SERVO PG506
PB 9V
REC 9V
9V
A
B
C
D
E
1
2
3
4
5
6
7
8

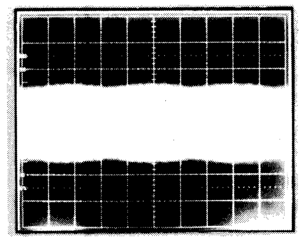

LUMIN
IC201
IC202
IC203
IC204


IC202
HT4218
IC203
HT4219
IC205
TA4301
IC206
TA4326
D201
1S2076
CP203
1.4MHz
BPF
REC LUMI. LEVEL
Q203
2SC945P
CP205
FO
CP204
3.5MHz
LPF
HI-PASS LIMIT
HI PASS LIMIT
LIMIT
FM DEMOD
PB REC
PB LEAKAGE PREVENT
V. SAG COMPEN
AGC AMP
CLAMP
AGC DET
SYNC SEPA
PULSE DELAY
AGC COMPEN
REC PB
NOISE CLIP
PEAK CLIP
VIDEO AMP
DYNAMIC DE EMPH
YC MIX
SQUELCH
PB EE
EE VIDEO AMP
Q216
2SC945P
CP206
1.5MHz
LPF
Q210
2SC945P
Q211
2SC945P
CP207
5.06MHz
BPF
TP204
TP205
APC
Fo
Q213
2SC945P
Q212
2SC945P
Q214
2SC945P
X201
D208
1S2076
REC AMP
SUB CONV
1/160
PB 1/4
PB 1/8
PB MAIN CONV
LOGIC
GATE
REC Φ DET 1
PB DECODE
SW AMP
PB KILLER AMP
1/4
160fH VCO
PB
REC
PB Φ DET
ACC DET
KILLER DET
443MHz OSC
REC Φ DET 2
BURST GATE PULSE GEN
1/2 PULSE KILLER
ACC AMP
REC MAIN CONV KILLER AMP
BUFFER
KILLER AMP
CP208
4.4MHz
BPF
CP202
1.5MHz
LPF
D210
1S2076
D207
1S2076
DL202
2H DELAY
PB CHROMA LEVEL
AMP
BUFFER
REC CHROMA LEVEL
SW30Hz GATE
DIFF
DIFF
MONO MULTI
D204
1S2076
D205
1S2076
D206
1S2076
VERT. DRIVE PULSE
PB 9V
REC 9V
GND
4
5
6
7
8

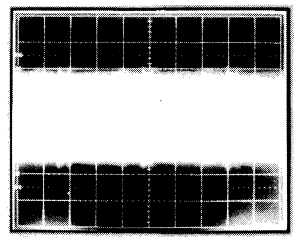
LUMINANCE/CHROMA WAVEFORMS

[IC201]

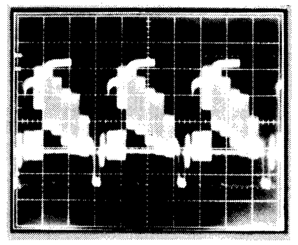

① PIN ① REC
0.5V/20μsec. div.

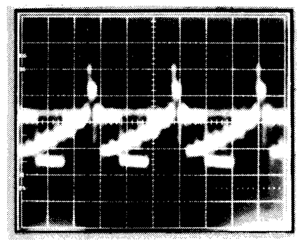

② PIN ⑦ PLAY
0.2V/20μsec. div.

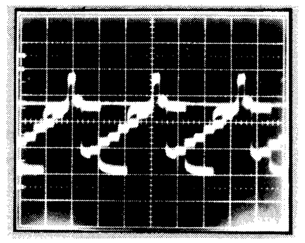
[TEST POINT]


⑯ TP201 REC
50mV/20μsec. div.

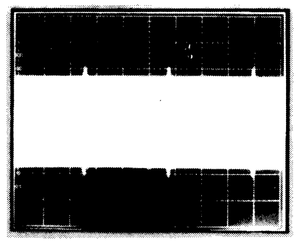
[IC202]

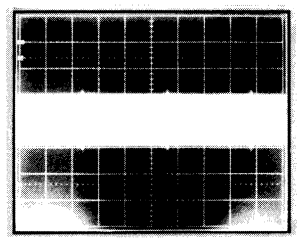

③ PIN ② REC
0.2V/20μsec. div.

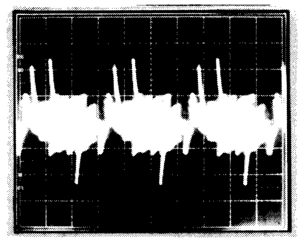

④ PIN ⑭ PLAY
0.1V/20μsec. div.

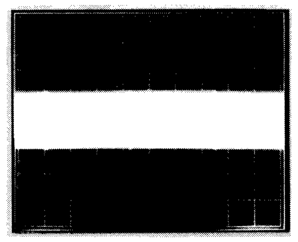

⑤ PIN ⑯ REC
0.1V/20μsec. div.

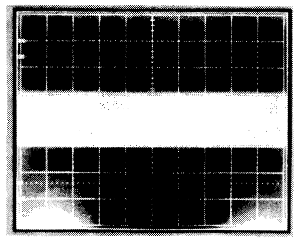
[IC203]

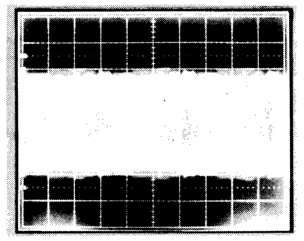

⑥ PIN ③ REC
0.1V/20μsec. div.

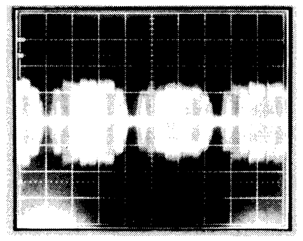

⑦ PIN ③ PLAY
0.2V/20μsec. div.


⑧ PIN ⑦ REC
0.2V/20μsec. div.

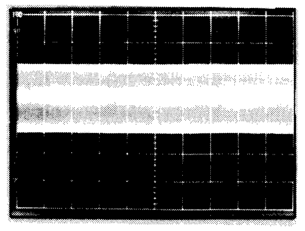

⑨ PIN ⑫ REC
0.5V/20μsec. div.

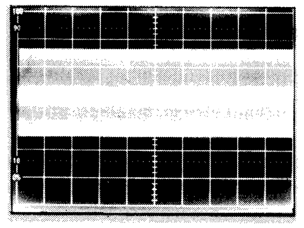

⑩ PIN ⑫ PLAY
0.5V/20μsec. div.

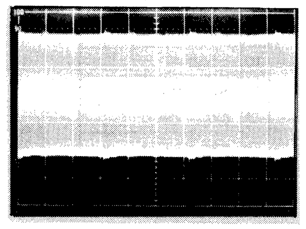

⑪ PIN ㉓ REC
50mV/20μsec. div.

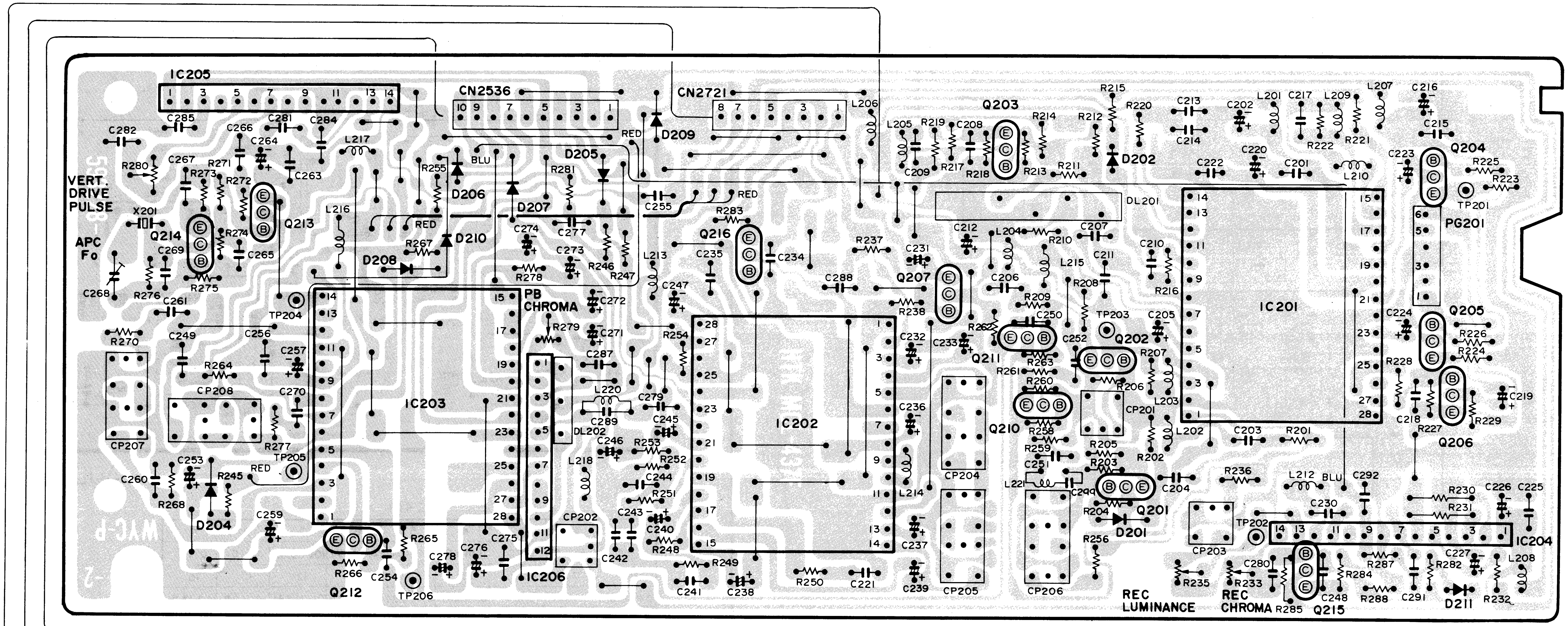

⑫ PIN ㉗ PLAY
0.5V/20μsec. div.

[IC204]


⑬ PIN ② REC
2V/20μsec. div.


⑭ PIN ⑦ REC
0.1V/20μsec. div.


⑮ PIN ⑬ REC
0.1V/20μsec. div.


IC205
CN2536
CN2721
RED
BLU
VERT. DRIVE PULSE
APC Fo
X201
Q214
Q213
D205
D206
D207
D208
D209
D210
PB CHROMA
IC203
IC206
IC202
IC201
IC204
Q203
Q204
Q205
Q206
Q207
Q210
Q211
Q202
Q201
Q212
Q215
Q216
D201
D202
D204
D211
DL201
DL202
PG201
CP201
CP202
CP203
CP204
CP205
CP206
CP207
CP208
TP201
TP202
TP203
TP204
TP205
TP206
REC LUMINANCE
REC CHROMA
WYC-P

LUMINANCE / CHROMA P.C.B

PG201

6	CH-1 REC
5	CH-1 PB
4	GND
3	GND
2	CH-2 PB
1	CH-2 REC

To
VIDEO
HEAD
CN201

PG257

1	GND

To
SERVO
CN257

CN2721

8	———
7	9V
6	REC 9V
5	PB 9V
4	GND
3	VIDEO
2	GND
1	VIDEO

To
SERVO
PG701

CN2536

1	GND
2	SPEED PLAY
3	MONITOR CUT
4	SYNC
5	SW25Hz
6	REC START
7	COLOUR
8	SECAM
9	4.43MHz
10	INSERT

To
SERVO
PG506

IC201

14	0 (5.9)	15	0 (0.3)
13	0 (2.8)	16	0 (1.7)
12	0 (5.9)	17	0 (1.7)
11	0 (0)	18	0 (8.8)
10	0 (4.6)	19	8.7 (0)
9	4.2 (0)	20	6.8 (0)
8	0 (0)	21	0.6 (0)
7	0 (0)	22	0 (0)
6	0 (0)	23	0.6 (0)
5	0.8 (0)	24	0 (0)
4	8.6 (0)	25	— (—)
3	7.4 (0)	26	— (—)
2	0 (0)	27	— (—)
1	4.6 (5.4)	28	— (—)

IC202

28	7.8 (5.7)	1	5.5 (5.5)
27	0.8 (0.8)	2	6.2 (6.0)
26	0 (0)	3	0.3 (0.3)
25	0 (0)	4	0 (1.3)
24	5.9 (5.0)	5	7.6 (8.3)
23	0 (0)	6	8.8 (0)
22	0 (1.2)	7	— (—)
21	3.3 (2.8)	8	8.8 (8.8)
20	4.1 (4.3)	9	4.3 (5.6)
19	4.0 (4.7)	10	4.3 (5.6)
18	4.7 (5.1)	11	0 (0)
17	2.0 (0)	12	1.1 (0)
16	3.7 (3.5)	13	4.2 (4.2)
15	4.7 (4.7)	14	7.6 (8.4)

IC203

14	3.1 (3.1)	15	2.3 (2.3)
13	5.5 (5.5)	16	— (—)
12	6.6 (6.6)	17	— (—)
11	7.2 (7.2)	18	5.4 (5.4)
10	7.1 (7.2)	19	5.4 (5.2)
9	8.8 (8.8)	20	5.4 (5.2)
8	4.2 (6.4)	21	0 (0)
7	0 (7.0)	22	0 (0)
6	4.5 (4.5)	23	0 (0)
5	3.4 (3.4)	24	8.8 (8.8)
4	3.3 (3.3)	25	5.4 (5.4)
3	0 (0)	26	1.4 (0.7)
2	4.8 (4.8)	27	6.2 (6.1)
1	1.5 (1.5)	28	4.0 (3.3)

IC206

1	7.8 (0)
2	0 (0)
3	6.7 (0)
4	0 (0)
5	6.0 (0)
6	8.8 (8.8)
7	6.2 (6.1)
8	0 (1.4)
9	0 (1.4)
10	4.4 (0)
11	0 (0)
12	8.8 (0)

Q201

B	2.5 (0)
C	8.7 (0)
E	1.9 (0)

Q202

B	1.9 (0)
C	7.4 (0)
E	1.2 (0)

Q203

B	1.7 (0)
C	7.6 (0)
E	1.1 (0)

Q204

B	0 (0.8)
C	0 (0)
E	0 (0)

Q205

B	0 (0.8)
C	0 (0)
E	0 (0)

Q206

B	0.7 (0)
C	0 (4.4)
E	0 (0)

Q207

B	5.5 (5.5)
C	6.2 (6.2)
E	0 (0)

Q210

B	2.0 (0)
C	5.7 (0)
E	1.3 (0)

Q211

B	5.7 (0)
C	8.7 (0)
E	5.1 (0)

Q212

B	0.5 (0.3)
C	3.3 (3.3)
E	0 (0)

Q213

B	3.8 (3.8)
C	8.8 (8.8)
E	3.2 (3.2)

Q214

B	2.3 (2.3)
C	4.0 (4.0)
E	2.4 (2.4)

Q215

B	0 (5.7)
C	0 (8.8)
E	0 (5.3)

Q216

B	5.9 (5.0)
C	8.8 (8.8)
E	5.1 (4.3)

IC204

14	13	12	11	10	9	8	7	6	5	4	3	2	1
0 (0)	0 (0)	0 (1.4)	0 (7.4)	0 (7.5)	0 (0)	0 (0)	0 (0.3)	0 (4.3)	0 (0)	0 (0)	0 (4.3)	0 (4.4)	0 (8.8)

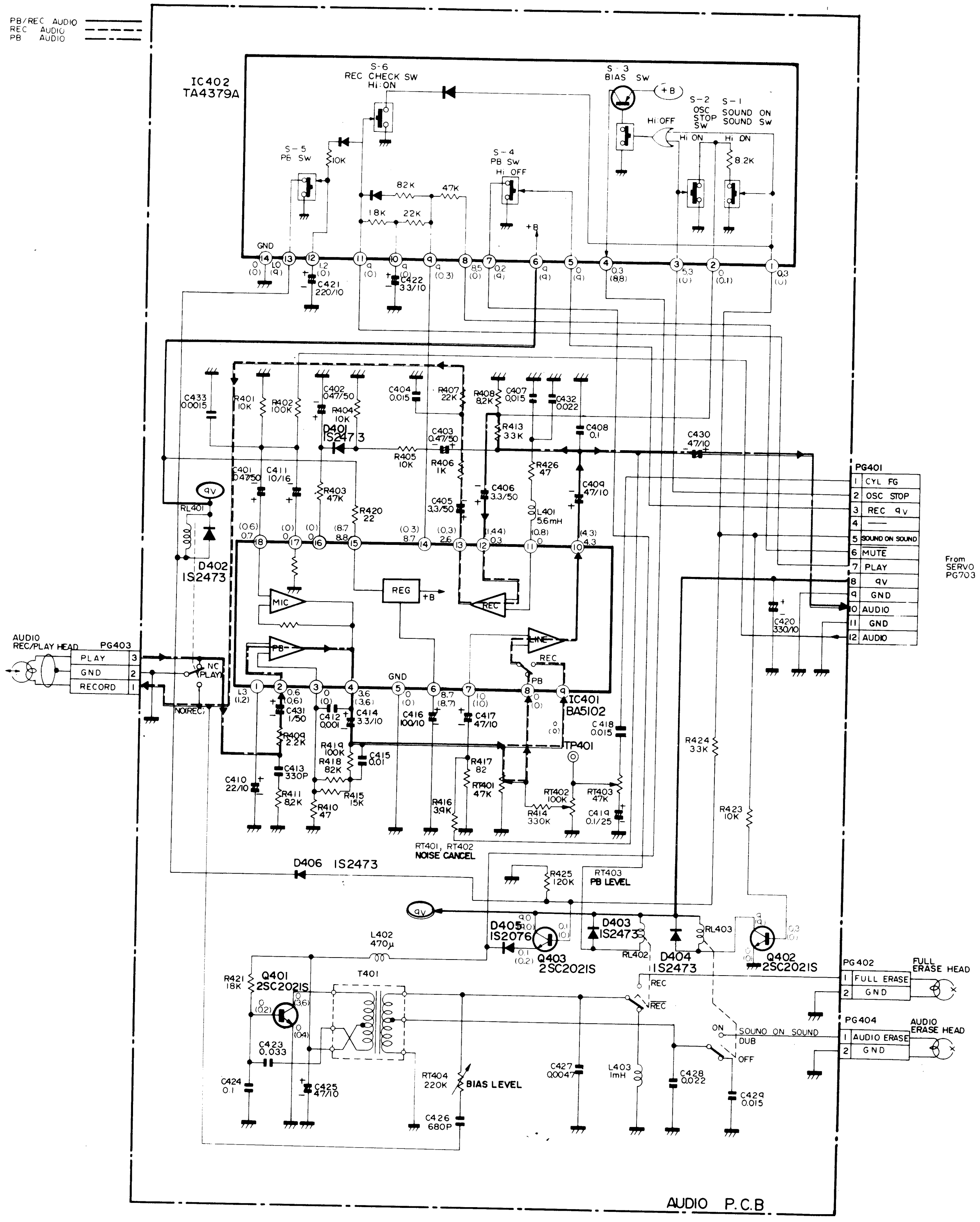
IC205

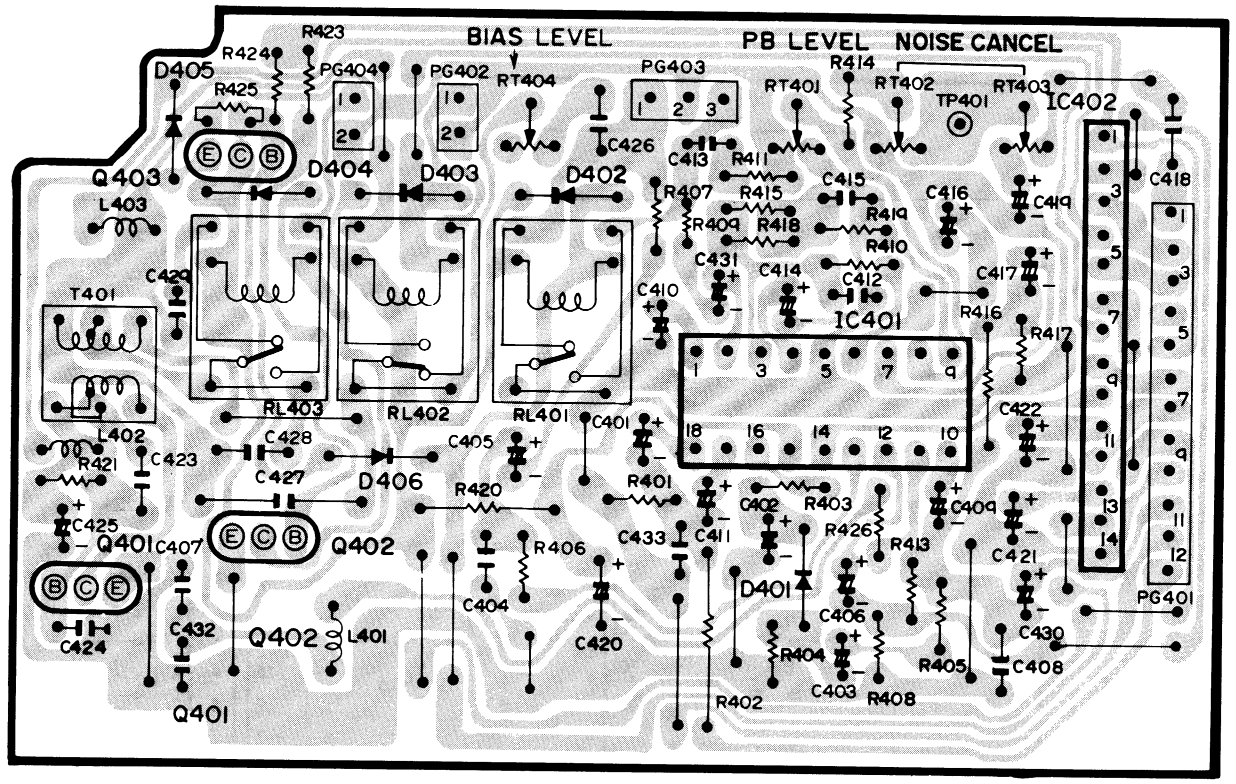
1	2	3	4	5	6	7	8	9	10	11	12	13	14
4.7 (4.7)	5.6 (4.1)	5.7 (0)	0 (0)	0 (0)	0.8 (0)	0 (0)	8.8 (0)		8.8 (0)	8.8 (0)	1.2 (0)	0 (0)	0 (0)

E
D
C
B
A

1 2 3 4 5 6 7 8

AUDIO


PB/REC AUDIO
REC AUDIO
PB AUDIO
IC402 TA4379A
S-6 REC CHECK SW Hi:ON
S-5 PB SW
S-4 PB SW Hi:OFF
S-3 BIAS SW
+B
S-2 OSC STOP SW
S-1 SOUND ON SOUND SW
Hi:OFF
Hi ON
10K
82K
47K
18K
22K
8.2K
GND
C421 220/10
C422 33/10
C433 0.0015
R401 10K
R402 100K
C402 0.47/50
R404 10K
D401 1S2473
C404 0.015
R407 22K
R408 8.2K
C407 0.015
C432 0.022
C408 0.1
R413 33K
C403 0.47/50
R405 10K
R406 1K
C405 3.3/50
C406 3.3/50
R426 47
L401 5.6mH
C409 47/10
C430 47/10
C401 0.47/50
C411 10/16
R403 47K
R420 22
9V
RL401
D402 1S2473
MIC
REG
REC
PB
LINE
IC401 BA5102
AUDIO REC/PLAY HEAD
PG403
PLAY
GND
RECORD
NC (PLAY)
NO (REC)
C431 1/50
C412 0.001
C414 3.3/10
C416 100/10
C417 47/10
C418 0.015
TP401
R409 2.2K
R419 100K
R418 82K
C415 0.01
C413 330P
C410 22/10
R411 8.2K
R410 47
R415 15K
R416 3.9K
R417 82
RT401 47K
RT402 100K
R414 330K
RT403 47K
C419 0.1/25
RT401, RT402 NOISE CANCEL
R424 33K
R423 10K
C420 330/10
PG401
1 CYL FG
2 OSC STOP
3 REC 9V
4 ——
5 SOUND ON SOUND
6 MUTE
7 PLAY
8 9V
9 GND
10 AUDIO
11 GND
12 AUDIO
From SERVO PG703
D406 1S2473
R425 120K
RT403 PB LEVEL
L402 470μ
D405 1S2076
Q403 2SC2021S
D403 1S2473
RL402
D404 1S2473
RL403
Q402 2SC2021S
R421 18K
Q401 2SC2021S
T401
C423 0.033
C424 0.1
C425 47/10
RT404 220K BIAS LEVEL
C426 680P
C427 0.0047
L403 1mH
C428 0.022
C429 0.015
REC
ON
SOUND ON SOUND
DUB
OFF
PG402
1 FULL ERASE
2 GND
FULL ERASE HEAD
PG404
1 AUDIO ERASE
2 GND
AUDIO ERASE HEAD
AUDIO P.C.B


BIAS LEVEL
PB LEVEL
NOISE CANCEL
R423
R424
R425
D405
PG404
PG402
RT404
PG403
R414
RT401
RT402
RT403
TP401
IC402
Q403
E C B
D404
D403
D402
C426
C413
R411
C415
C416
C419
C418
L403
R407
R415
R419
R409
R418
R410
C431
C414
C412
C417
T401
C429
C410
IC401
R416
R417
RL403
RL402
RL401
C401
C428
C405
L402
R421
C423
C427
D406
R420
R401
C402
R403
C409
C425
Q401
C407
Q402
R406
C433
C411
R426
R413
C421
B C E
C404
D401
C406
C430
C424
C432
L401
C420
R404
R405
C408
R402
C403
R408
PG401

AUDIO P.C.B

IC 401

1	2	3	4	5	6	7	8	9
1.3 (1,2)	0.6(0.6)	0 (0)	3.6(3.6)	0 (0)	8.7 (8.7)	10.0(10.0)	0 (0)	0 (0)
18	17	16	15	14	13	12	11	10
0.7 (0.6)	0 (0)	0 (0)	8.7 (8.8)	8.7 (0.3)	2.6(0.3)	0.3 (1.44)	0 (0.8)	4.3 (4.3)

IC 402

1	0.3 (0)
2	0 (0.1)
3	5.3 (0)
4	0.3 (8.8)
5	0 (9)
6	9 (9)
7	0.2 (9)
8	8.5 (0)
9	8.7 (0.3)
10	9 (0)
11	9.0 (0)
12	1.2 (0)
13	1.0 (9.0)
14	0 (0)

PG 401

12	AUDIO
11	GND
10	AUDIO
9	GND
8	9 V
7	PLAY
6	MUTE
5	SOUND ON SOUND
4	————
3	REC 9V
2	OSC STOP
1	CYL FG

From
SERVO
PG 703

PG402

1	FULL ERASE
2	GND

From
FULL ERASE HEAD
CN402

PG403

3	PLAY
2	GND
1	RECORD

From
AUDIO HEAD
CN403

PG404

1	AUDIO ERASE
2	GND

From
SOUND ON
SOUND
CN404

Q401

B	0.5 (0.2)
C	0.5 (8.7)
E	0 (0.4)

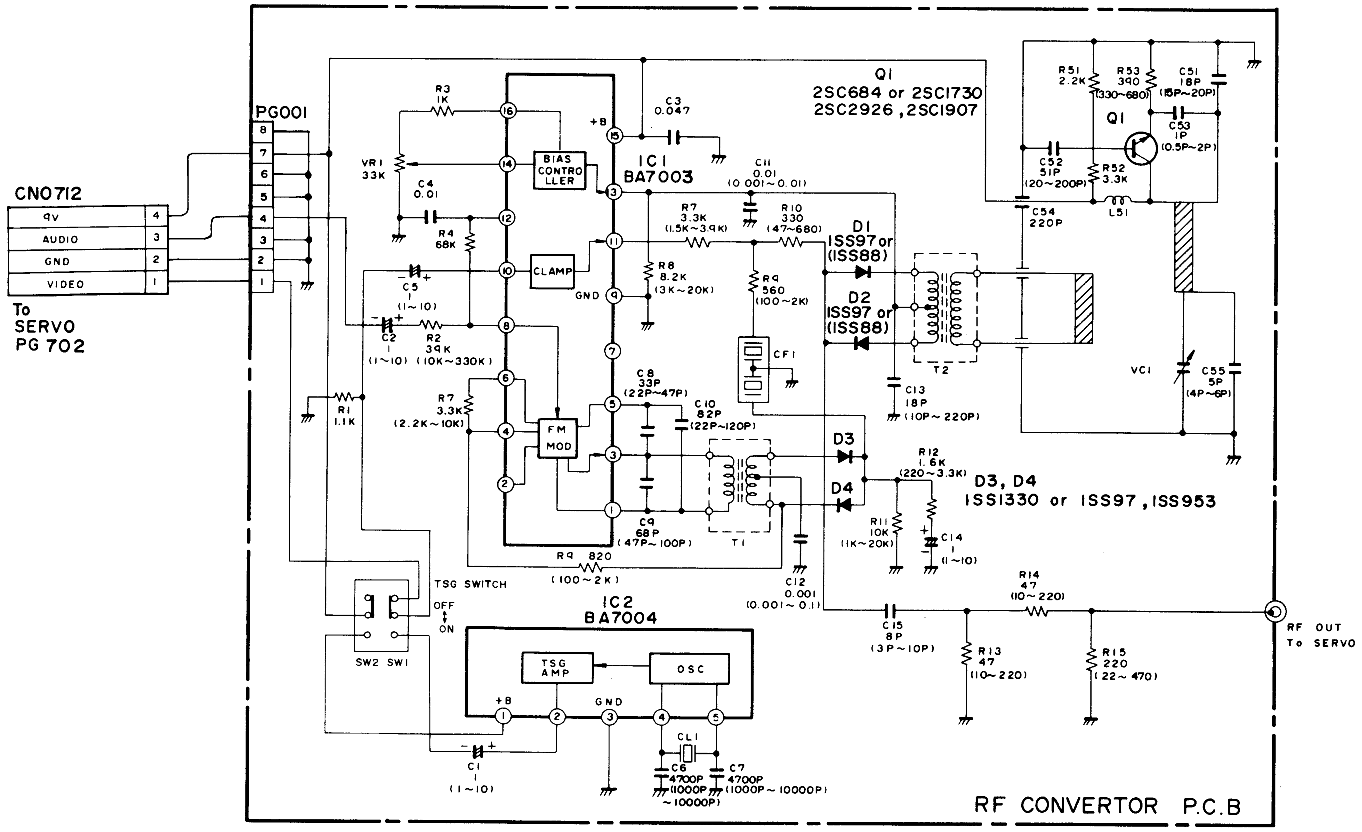
Q402

B	0.3 (0)
C	9 (9)
E	0 (0)

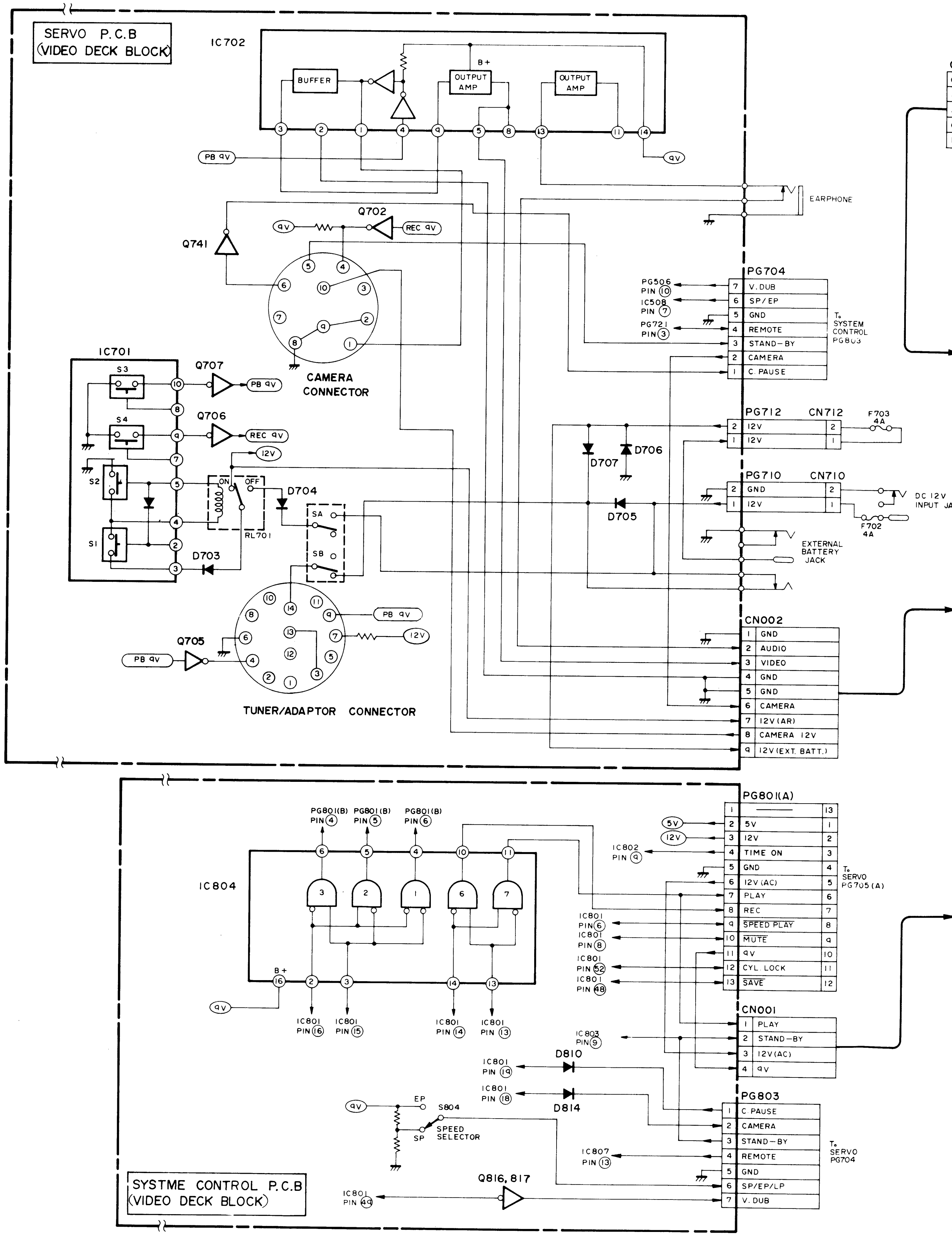
Q403

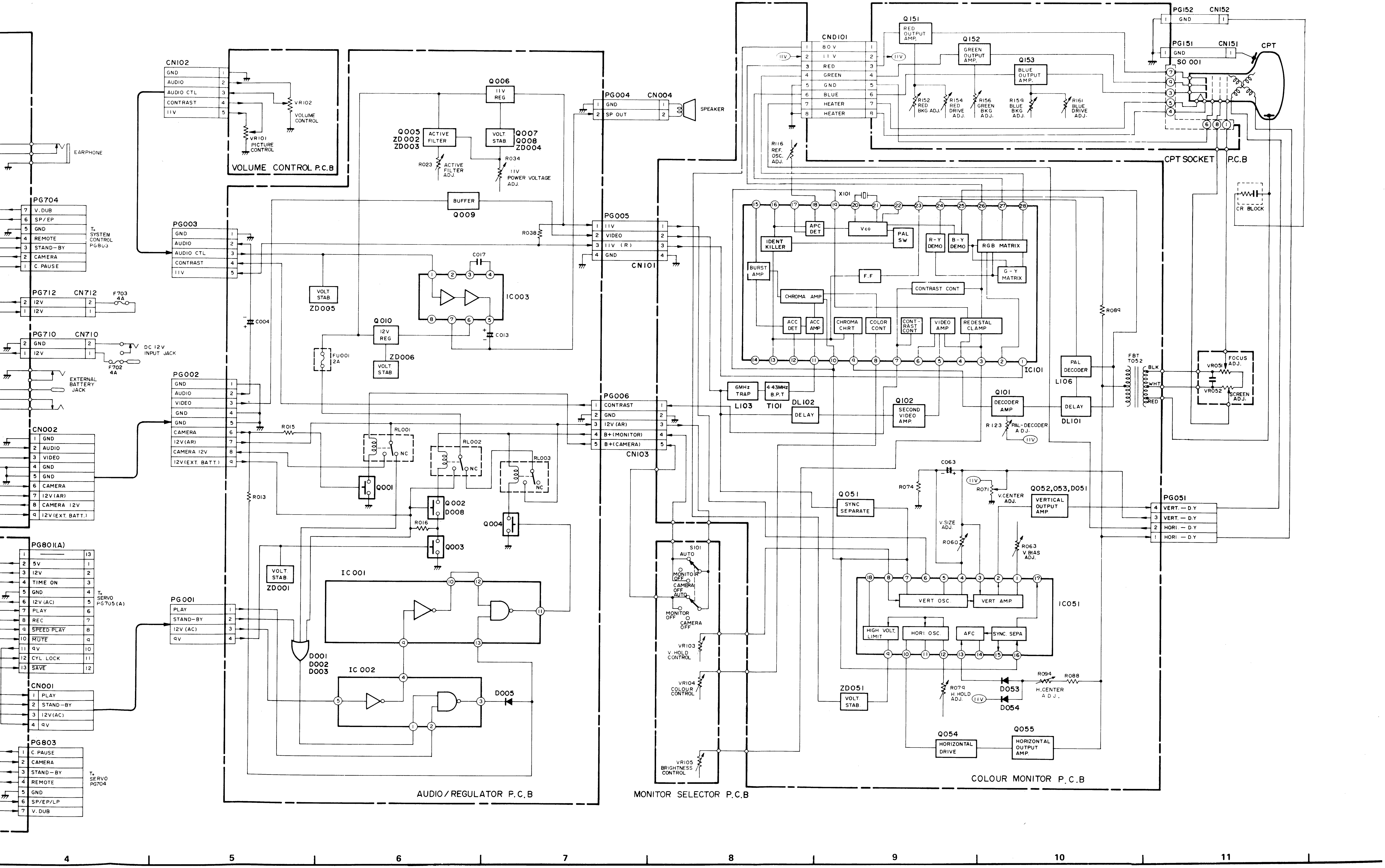
B	0.1 (0)
C	9.0 (9.0)
E	0.1 (0.2)

RF CONVERTER

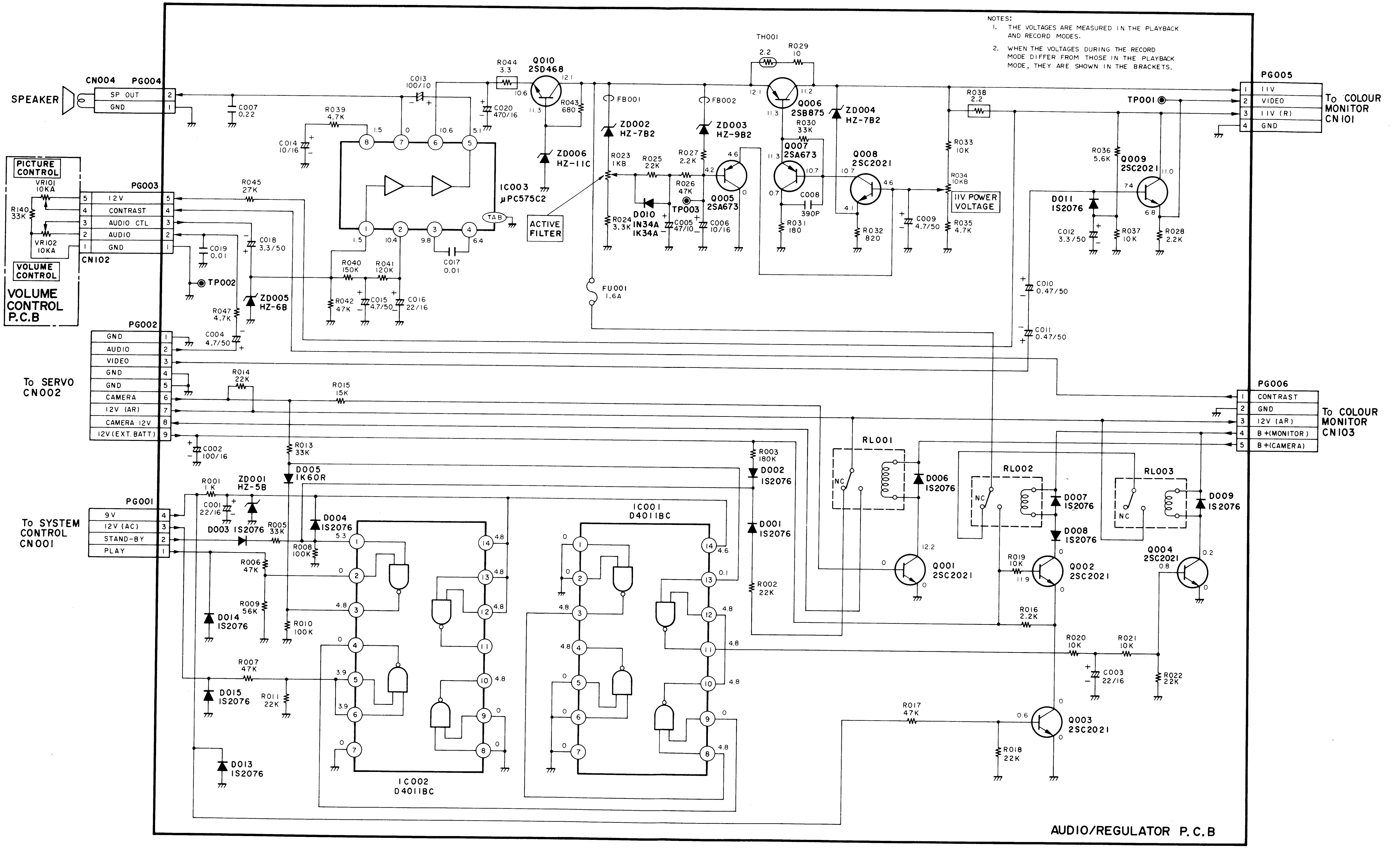

CN0712
9V
AUDIO
GND
VIDEO
To SERVO PG 702
PG001
VR1 33K
R3 1K
C4 0.01
R4 68K
C5 1 (1~10)
C2 1 (1~10)
R2 39K (10K~330K)
R7 3.3K (2.2K~10K)
R1 1.1K
BIAS CONTROLLER
CLAMP
FM MOD
IC1 BA7003
C3 0.047
C11 0.01 (0.001~0.01)
R7 3.3K (1.5K~3.9K)
R10 330 (47~680)
R8 8.2K (3K~20K)
R9 560 (100~2K)
CF1
D1 1SS97 or (1SS88)
D2 1SS97 or (1SS88)
T2
C13 18P (10P~220P)
C8 33P (22P~47P)
C10 82P (22P~120P)
C9 68P (47P~100P)
T1
D3
D4
R12 1.6K (220~3.3K)
D3, D4 1SS1330 or 1SS97, 1SS953
R11 10K (1K~20K)
C14 1 (1~10)
R9 820 (100~2K)
C12 0.001 (0.001~0.1)
Q1 2SC684 or 2SC1730 2SC2926, 2SC1907
R51 2.2K
R53 390 (330~680)
C51 18P (15P~20P)
C53 1P (0.5P~2P)
C52 51P (20~200P)
R52 3.3K
L51
C54 220P
VC1
C55 5P (4P~6P)
R14 47 (10~220)
C15 8P (3P~10P)
R13 47 (10~220)
R15 220 (22~470)
RF OUT To SERVO
TSG SWITCH
OFF
ON
SW2 SW1
IC2 BA7004
TSG AMP
OSC
GND
C1 1 (1~10)
CL1
C6 4700P (1000P ~10000P)
C7 4700P (1000P~10000P)
RF CONVERTOR P.C.B

BLOCK DIAGRAM (COLOUR MONITOR BLOCK)


SERVO P.C.B (VIDEO DECK BLOCK)
IC702
BUFFER
OUTPUT AMP
OUTPUT AMP
B+
PB 9V
9V
EARPHONE
Q702
REC 9V
Q741
CAMERA CONNECTOR
PG704
7 V.DUB
6 SP/EP
5 GND
4 REMOTE
3 STAND-BY
2 CAMERA
1 C PAUSE
PG506 PIN ⑩
IC508 PIN ⑦
PG721 PIN ③
To SYSTEM CONTROL PG803
IC701
S3
S4
S2
S1
Q707
Q706
12V
RL701
D704
SA
SB
D703
D707
D706
D705
PG712
CN712
12V
F703 4A
PG710
CN710
GND
12V
DC 12V INPUT JA
F702 4A
EXTERNAL BATTERY JACK
Q705
TUNER/ADAPTOR CONNECTOR
CN002
1 GND
2 AUDIO
3 VIDEO
4 GND
5 GND
6 CAMERA
7 12V (AR)
8 CAMERA 12V
9 12V (EXT. BATT.)
PG801(A)
2 5V
3 12V
4 TIME ON
5 GND
6 12V (AC)
7 PLAY
8 REC
9 SPEED PLAY
10 MUTE
11 9V
12 CYL LOCK
13 SAVE
To SERVO PG705 (A)
IC802 PIN ⑨
PG801(B) PIN ④
PG801(B) PIN ⑤
PG801(B) PIN ⑥
IC804
IC801 PIN ⑥
IC801 PIN ⑧
IC801 PIN 52
IC801 PIN 48
IC801 PIN ⑯
IC801 PIN ⑮
IC801 PIN ⑭
IC801 PIN ⑬
CN001
1 PLAY
2 STAND-BY
3 12V (AC)
4 9V
IC803 PIN ⑨
D810
IC801 PIN ⑲
IC801 PIN ⑱
D814
EP
S804
SPEED SELECTOR
SP
PG803
1 C PAUSE
2 CAMERA
3 STAND-BY
4 REMOTE
5 GND
6 SP/EP/LP
7 V.DUB
To SERVO PG704
IC807 PIN ⑬
Q816, 817
IC801 PIN 49
SYSTME CONTROL P.C.B (VIDEO DECK BLOCK)


CN102
GND
AUDIO
AUDIO CTL
CONTRAST
11V
VR102 VOLUME CONTROL
VR101 PICTURE CONTROL
VOLUME CONTROL P.C.B
EARPHONE
PG704
V.DUB
SP/EP
GND
REMOTE
STAND-BY
CAMERA
C.PAUSE
T. SYSTEM CONTROL PG803
PG712 CN712
12V
F703 4A
PG710 CN710
DC 12V INPUT JACK
F702 4A
EXTERNAL BATTERY JACK
CN002
VIDEO
12V (AR)
CAMERA 12V
12V (EXT. BATT.)
PG801(A)
5V
12V
TIME ON
12V (AC)
PLAY
REC
SPEED PLAY
MUTE
9V
CYL LOCK
SAVE
T. SERVO PG705 (A)
CN001
PG803
SP/EP/LP
T. SERVO PG704
PG003
PG002
PG001
Q006 11V REG
Q005 ZD002 ZD003 ACTIVE FILTER
R023 ACTIVE FILTER ADJ.
Q007 Q008 ZD004 VOLT STAB
R034 11V POWER VOLTAGE ADJ.
BUFFER Q009
R038
C017
IC003
VOLT STAB ZD005
C004
Q010 12V REG
C013
FU001 2A
ZD006 VOLT STAB
R015
RL001 NC
RL002 NC
RL003 NC
Q001
Q002 D008
R016
Q003
Q004
R013
VOLT STAB ZD001
IC001
IC002
D001 D002 D003
D005
AUDIO / REGULATOR P.C.B
PG004 CN004
SP OUT
SPEAKER
PG005
11V (R)
CN101
PG006
B+ (MONITOR)
B+ (CAMERA)
CN103
S101 AUTO
MONITOR OFF
CAMERA OFF
VR103 V.HOLD CONTROL
VR104 COLOUR CONTROL
VR105 BRIGHTNESS CONTROL
MONITOR SELECTOR P.C.B
CND101
80V
RED
GREEN
BLUE
HEATER
Q151 RED OUTPUT AMP.
Q152 GREEN OUTPUT AMP.
Q153 BLUE OUTPUT AMP.
R152 RED BKG ADJ.
R154 RED DRIVE ADJ.
R156 GREEN BKG ADJ.
R159 BLUE BKG ADJ.
R161 BLUE DRIVE ADJ.
PG152 CN152
PG151 CN151
CPT
SO 001
CPT SOCKET P.C.B
R116 REF. OSC. ADJ.
X101
APC DET
Vco
PAL SW
IDENT KILLER
R-Y DEMO
B-Y DEMO
RGB MATRIX
G-Y MATRIX
BURST AMP
F.F
CONTRAST CONT
CHROMA AMP
ACC DET
ACC AMP
CHROMA CHRT
COLOR CONT
CONT-RAST CONT
VIDEO AMP
REDESTAL CLAMP
IC101
R089
CR BLOCK
6MHz TRAP L103
4.43MHz B.P.T T101
DL102 DELAY
Q102 SECOND VIDEO AMP
Q101 DECODER AMP
R123 PAL-DECODER ADJ.
PAL DECODER L106
DELAY DL101
FBT T052
BLK
WHT
RED
FOCUS ADJ.
VR051
VR052
SCREEN ADJ.
C063
R074
R071 V.CENTER ADJ.
Q052,053,D051 VERTICAL OUTPUT AMP
Q051 SYNC SEPARATE
PG051
VERT.-D.Y
HORI.-D.Y
V.SIZE ADJ.
R060
R063 V.BIAS ADJ.
IC051
VERT OSC.
VERT AMP
HIGH VOLT. LIMIT
HORI. OSC.
AFC
SYNC. SEPA
ZD051 VOLT STAB
R079 H.HOLD ADJ.
D053
D054
R094 R088 H.CENTER ADJ.
Q054 HORIZONTAL DRIVE
Q055 HORIZONTAL OUTPUT AMP.
COLOUR MONITOR P.C.B
4
5
6
7
8
9
10
11

AUDIO/REGULATOR



SPEAKER
CN004
PG004
SP OUT
GND
C007 0.22
C013 100/10
R044 3.3
Q010 2SD468
C020 470/16
R043 680
ZD006 HZ-11C
R039 4.7K
C014 10/16
IC003 μPC575C2
TAB
ACTIVE FILTER
R040 150K
R041 120K
R042 47K
C015 4.7/50
C016 22/16
C017 0.01
PICTURE CONTROL
VR101 10KA
R140 33K
VR102 10KA
VOLUME CONTROL
VOLUME CONTROL P.C.B
CN102
PG003
12V
CONTRAST
AUDIO CTL
AUDIO
GND
R045 27K
C019 0.01
C018 3.3/50
TP002
ZD005 HZ-6B
R047 4.7K
C004 4.7/50
PG002
GND
AUDIO
VIDEO
GND
GND
CAMERA
12V (AR)
CAMERA 12V
12V (EXT.BATT)
To SERVO CN002
R014 22K
R015 15K
C002 100/16
R013 33K
D005 1K60R
FB001
ZD002 HZ-7B2
R023 1KB
R024 3.3K
R025 22K
D010 1N34A 1K34A
C005 47/10
TP003
R026 47K
C006 10/16
FU001 1.6A
FB002
ZD003 HZ-9B2
R027 2.2K
Q005 2SA673
TH001 2.2
R029 10
Q006 2SB875
R030 33K
Q007 2SA673
C008 390P
R031 180
ZD004 HZ-7B2
Q008 2SC2021
R032 820
C009 4.7/50
R038 2.2
R033 10K
R034 10KB
11V POWER VOLTAGE
R035 4.7K
C010 0.47/50
C011 0.47/50
TP001
R036 5.6K
Q009 2SC2021
D011 1S2076
C012 3.3/50
R037 10K
R028 2.2K
PG005
11V
VIDEO
11V (R)
GND
To COLOUR MONITOR CN101
PG006
CONTRAST
GND
12V (AR)
B+(MONITOR)
B+(CAMERA)
To COLOUR MONITOR CN103
PG001
9V
12V (AC)
STAND-BY
PLAY
To SYSTEM CONTROL CN001
R001 1K
C001 22/16
ZD001 HZ-5B
D003 1S2076
R005 33K
D004 1S2076
R008 100K
R006 47K
R009 56K
D014 1S2076
R010 100K
R007 47K
D015 1S2076
R011 22K
D013 1S2076
IC002 D4011BC
IC001 D4011BC
R003 180K
D002 1S2076
D001 1S2076
R002 22K
RL001
NC
D006 1S2076
Q001 2SC2021
RL002
D007 1S2076
D008 1S2076
R019 10K
Q002 2SC2021
RL003
D009 1S2076
Q004 2SC2021
R016 2.2K
R020 10K
R021 10K
C003 22/16
R022 22K
R017 47K
R018 22K
Q003 2SC2021
AUDIO/REGULATOR P.C.B

NOTES:
1. THE VOLTAGES ARE MEASURED IN THE PLAYBACK AND RECORD MODES.
2. WHEN THE VOLTAGES DURING THE RECORD MODE DIFFER FROM THOSE IN THE PLAYBACK MODE, THEY ARE SHOWN IN THE BRACKETS.

OLOUR
TOR
1

OLOUR
TOR
3

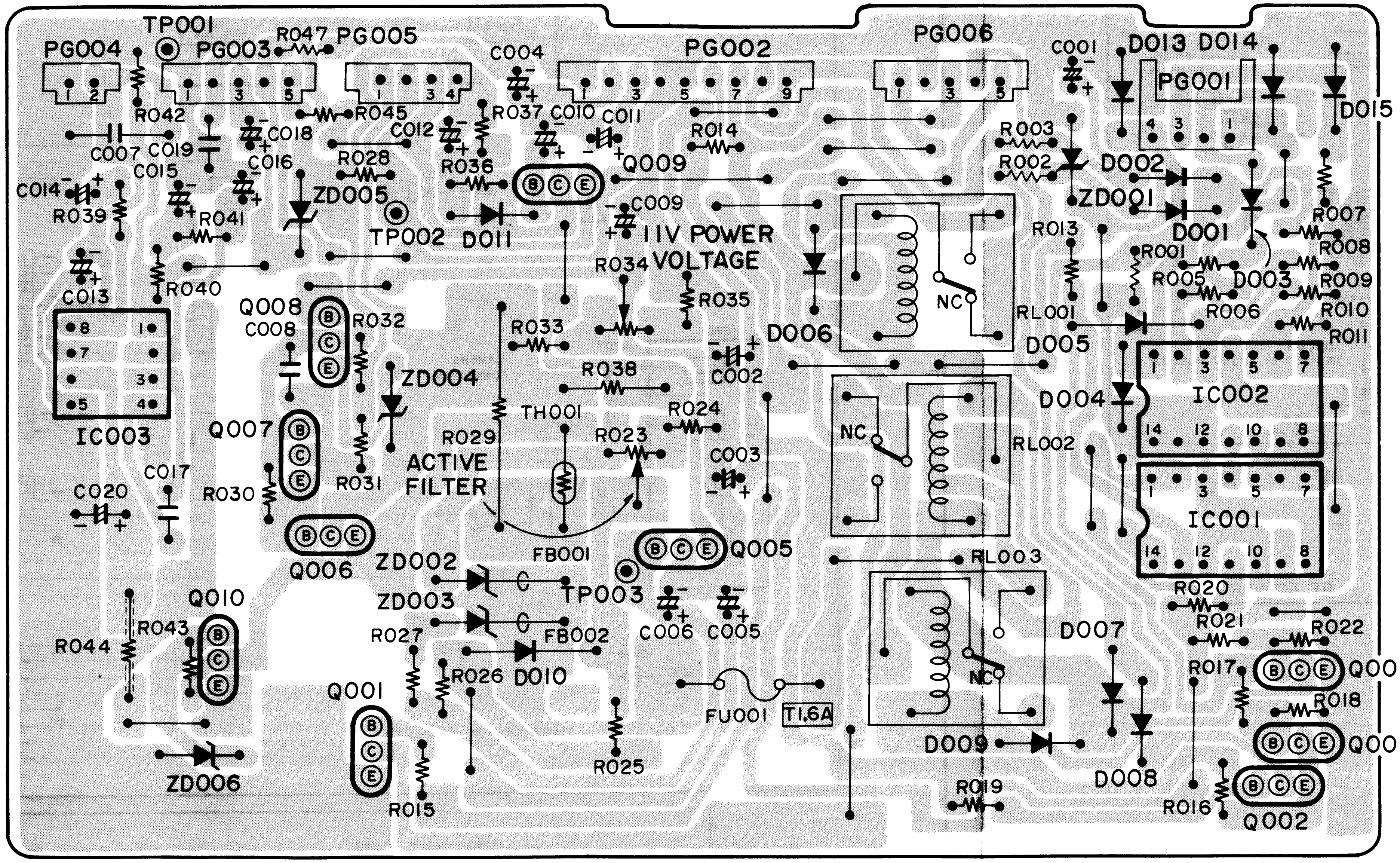
E

D

C

B

A


TP001
PG004
PG003
R047
PG005
C004
PG002
PG006
C001
D013
D014
PG001
D015
R042
R045
C012
R037
C010
C011
R014
C007
C019
C018
C015
C016
R028
R036
Q009
R003
R002
D002
C014
R039
R041
ZD005
TP002
D011
C009
11V POWER VOLTAGE
ZD001
D001
R013
R001
R005
D003
R007
R008
R009
R010
R011
R006
C013
R040
Q008
C008
R032
R033
R034
R035
NC
D006
RL001
D005
C002
IC003
Q007
ZD004
R038
R029
TH001
R024
ACTIVE FILTER
R023
D004
IC002
RL002
C017
C020
R030
R031
C003
IC001
Q006
ZD002
FB001
Q005
TP003
RL003
R020
Q010
ZD003
C006
C005
R021
R022
R043
R044
R027
FB002
D007
R017
Q004
R026
D010
R018
Q001
FU001
T1.6A
Q003
D009
ZD006
R025
R019
D008
R016
Q002
R015

AUDIO/REGULATOR P.C.B

PG004

1	GND
2	SP OUT

To SPEAKER
CN004

PG001

4	9V
3	12V (AC)
2	STAND-BY
1	PLAY

To SYSTEM CONTROL
CN001

PG003

5	12V
4	CONTRAST
3	AUDIO CTL
2	AUDIO
1	GND

To VOLUME CONTROL
CN102

PG005

1	11V
2	VIDEO
3	11V (R)
4	GND

To COLOUR MONITOR
CN101

PG002

1	GND
2	AUDIO
3	VIDEO
4	GND
5	GND
6	CAMERA
7	12V (AR)
8	CAMERA 12V
9	12V(EXT.BATT.)

To SERVO
CN002

PG006

1	CONTRAST
2	GND
3	12V (AR)
4	B+ (MONITOR)
5	B+ (CAMERA)

To COLOUR MONITOR
CN103

IC003

8	1.5	1	1.5
7	0	2	10.4
6	10.6	3	9.8
5	5.1	4	6.4

IC001

1	2	3	4	5	6	7
0	0	4.8	4.8	0	0	0
14	13	12	11	10	9	8
4.6	0.1	4.8	4.8	4.8	0	4.8

IC002

1	2	3	4	5	6	7
5.3	0	4.8	0	3.9	3.9	0
14	13	12	11	10	9	8
4.8	4.8	4.8	—	4.8	0	0

Q006

B	11.3
C	11.2
E	12.1

Q005

B	4.2
C	0
E	4.6

Q007

B	10.7
C	0.7
E	11.3

Q008

B	4.6
C	10.7
E	4.1

Q009

B	7.4
C	11.0
E	6.8

Q010

B	11.3
C	12.1
E	10.6

Q002

B	11.9
C	0
E	0

Q003

B	0.6
C	0
E	0

Q004

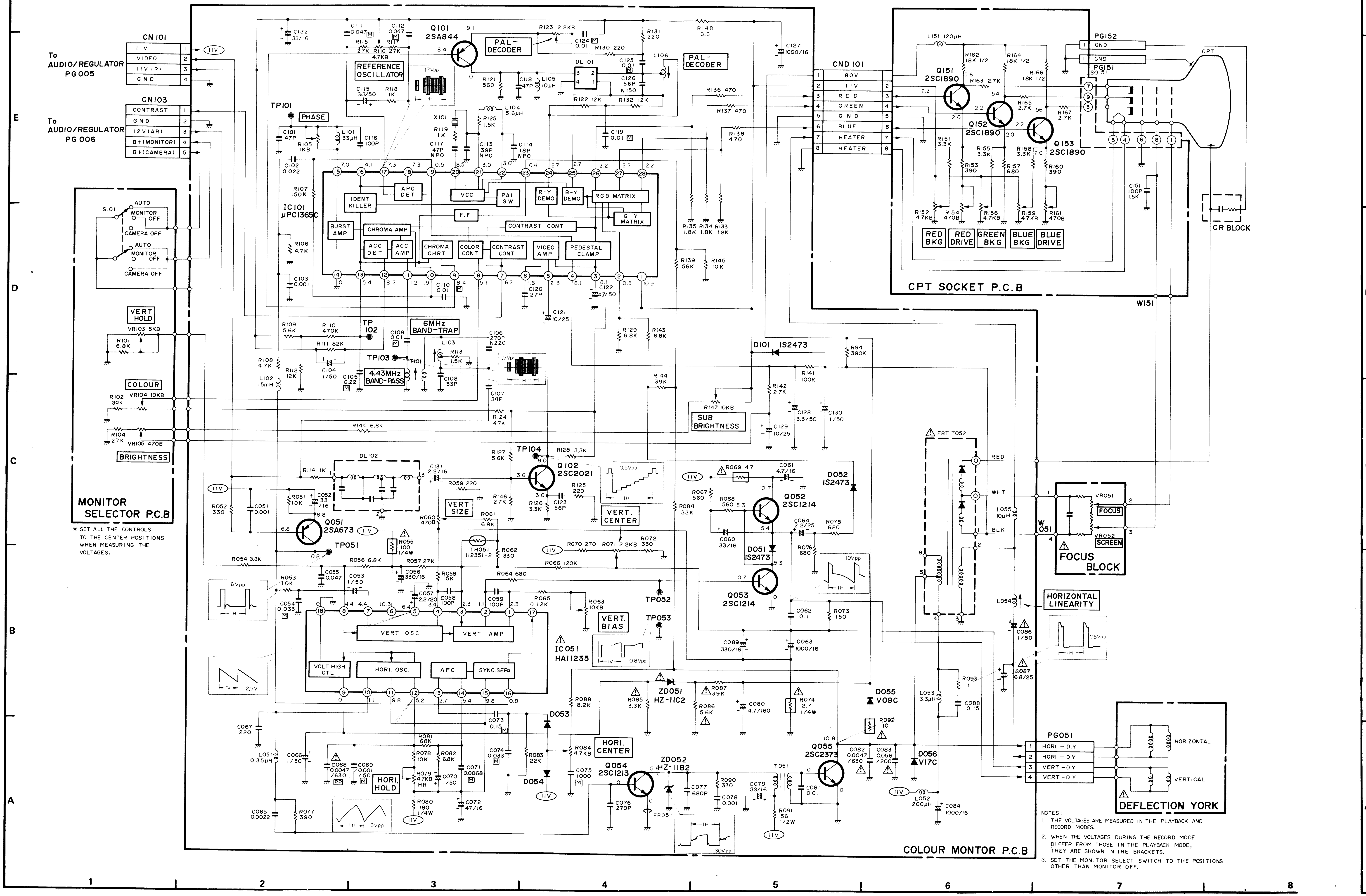
B	0.8
C	0.2
E	0

Q001

B	0
C	12.2
E	0

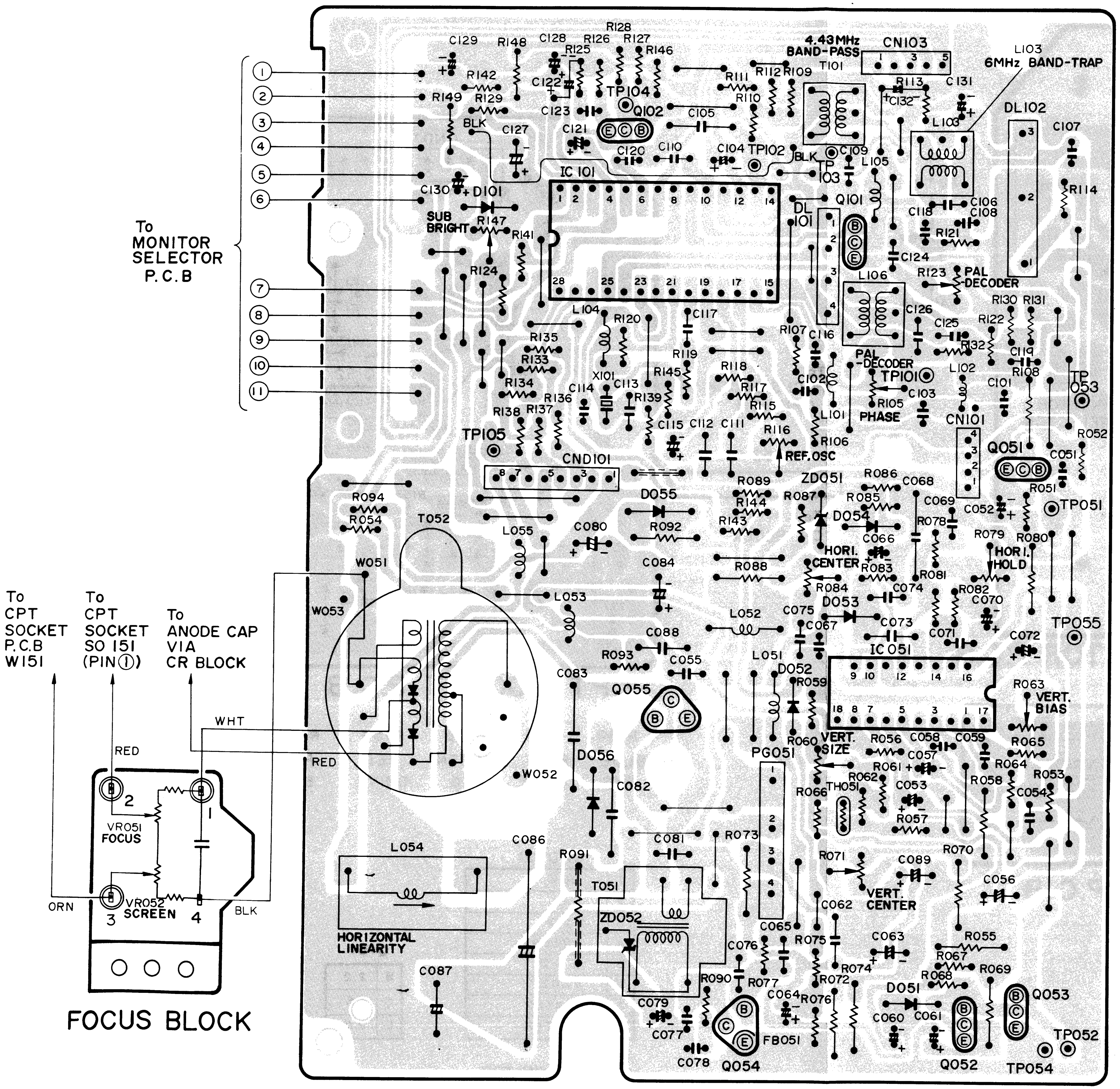
1 2 3 4 5 6 7 8

COLOUR MONITOR



CN101
11V
VIDEO
11V (R)
GND
To AUDIO/REGULATOR PG005
CN103
CONTRAST
GND
12V(AR)
B+(MONITOR)
B+(CAMERA)
To AUDIO/REGULATOR PG006
S101
AUTO
MONITOR OFF
CAMERA OFF
VERT HOLD
VR103 5KB
R101 6.8K
COLOUR
R102 39K
VR104 10KB
R104 27K
VR105 470B
BRIGHTNESS
MONITOR SELECTOR P.C.B
* SET ALL THE CONTROLS TO THE CENTER POSITIONS WHEN MEASURING THE VOLTAGES.
Q101 2SA844
PAL-DECODER
REFERENCE OSCILLATOR
TP101
PHASE
IC101 µPC1365C
IDENT KILLER
APC DET
VCC
PAL SW
R-Y DEMO
B-Y DEMO
RGB MATRIX
G-Y MATRIX
F.F
BURST AMP
CHROMA AMP
CONTRAST CONT
ACC DET
ACC AMP
CHROMA CHRT
COLOR CONT
CONTRAST CONT
VIDEO AMP
PEDESTAL CLAMP
DL101
X101
17Vpp
1H
TP102
6MHz BAND-TRAP
TP103
4.43MHz BAND-PASS
T101
1.5Vpp
SUB BRIGHTNESS
R147 10KB
D101 1S2473
DL102
Q102 2SC2021
TP104
0.5Vpp
VERT SIZE
VERT CENTER
Q051 2SA673
TP051
TH051 112351-2
6Vpp
IC051 HA11235
VERT OSC.
VERT AMP
VOLT. HIGH CTL
HORI. OSC.
AFC
SYNC. SEPA
2.5V
1V
VERT. BIAS
TP052
TP053
0.8Vpp
Q052 2SC1214
D052 1S2473
D051 1S2473
Q053 2SC1214
10Vpp
ZD051 HZ-11C2
D053
D054
HORI. CENTER
HORI. HOLD
3Vpp
Q054 2SC1213
ZD052 HZ-11B2
FB051
30Vpp
T051
Q055 2SC2373
D055 V09C
D056 V17C
COLOUR MONTOR P.C.B
CND101
80V
11V
RED
GREEN
GND
BLUE
HEATER
HEATER
Q151 2SC1890
Q152 2SC1890
Q153 2SC1890
RED BKG
RED DRIVE
GREEN BKG
BLUE BKG
BLUE DRIVE
CPT SOCKET P.C.B
PG152
GND
PG151
SO151
CPT
CR BLOCK
W151
FBT T052
RED
WHT
BLK
W051
VR051 FOCUS
VR052 SCREEN
FOCUS BLOCK
HORIZONTAL LINEARITY
7.5Vpp
PG051
HORI - D.Y
HORI - D.Y
VERT - D.Y
VERT - D.Y
HORIZONTAL
VERTICAL
DEFLECTION YORK
To CPT SOC P.C. W15
1
2
3
4
5
6
7
8
A
B
C
D
E

NOTES:
1. THE VOLTAGES ARE MEASURED IN THE PLAYBACK AND RECORD MODES.
2. WHEN THE VOLTAGES DURING THE RECORD MODE DIFFER FROM THOSE IN THE PLAYBACK MODE, THEY ARE SHOWN IN THE BRACKETS.
3. SET THE MONITOR SELECT SWITCH TO THE POSITIONS OTHER THAN MONITOR OFF.


To MONITOR SELECTOR P.C.B
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
To CPT SOCKET P.C.B W151
To CPT SOCKET SO 151 (PIN①)
To ANODE CAP VIA CR BLOCK
RED
WHT
RED
ORN
BLK
VR051 FOCUS
VR052 SCREEN
1
2
3
4
FOCUS BLOCK
IC 101
IC 051
Q101
Q102
Q051
Q052
Q053
Q054
Q055
4.43MHz BAND-PASS T101
CN103
L103 6MHz BAND-TRAP
DL102
DL 101
SUB BRIGHT
PAL DECODER
PAL -DECODER
PHASE
REF.OSC
TP101
TP102
TP103
TP104
TP105
TP051
TP052
TP053
TP054
TP055
CN101
CND101
PG051
ZD051
ZD052
D051
D052
D053
D054
D055
D056
D101
HORI. CENTER
HORI. HOLD
VERT. BIAS
VERT. SIZE
VERT. CENTER
T051
T052
TH051
FB051
W051
W052
W053
L054
HORIZONTAL LINEARITY

COLOUR MONITOR P.C.B

CN101

1	11V
2	VIDEO
3	11V
4	GND

To AUDIO / REGULATOR PG005

CN103

5	B+(CAMERA)
4	B+(MONITOR)
3	12V (AR)
2	GND
1	CONTRAST

To AUDIO / REGULATOR PG006

CND101

1	80V
2	11V
3	RED
4	GREEN
5	GND
6	BLUE
7	HEATER
8	HEATER

To CPT SOCKET CND001

PG051

1	HORI.- D.Y
2	HORI.- D.Y
3	VERT.- D.Y
4	VERT.- D.Y

To DEFLECTION YORK

Q101

B	8.4
C	0
E	9.1

Q102

B	3.6
C	9.0
E	3.0

Q051

B	6.8
C	0.8
E	6.8

Q053

B	0.7
C	5.3
E	0

Q054

B	0
C	5.6
E	0

Q055

B	0
C	10.8
E	0

Q052

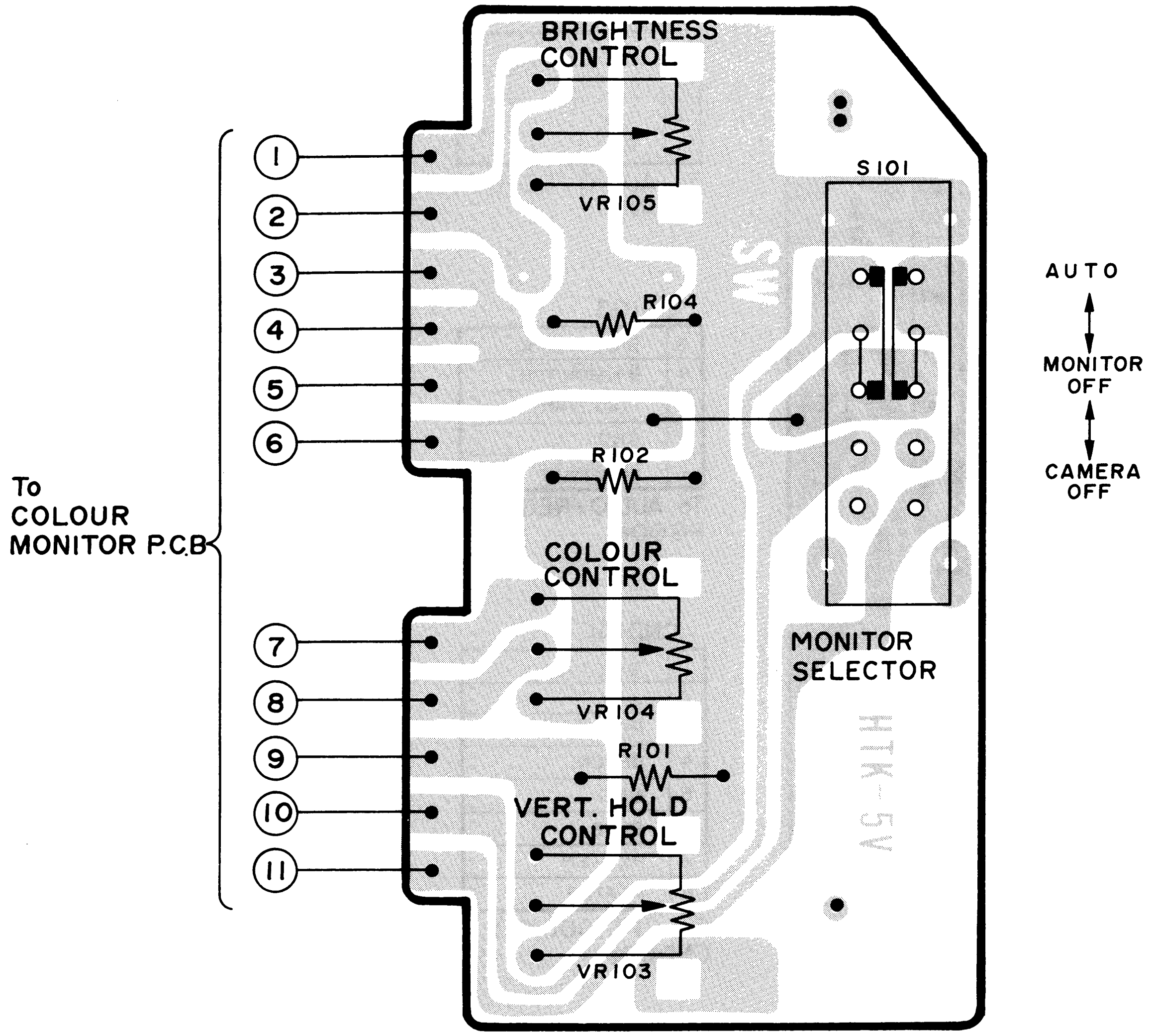
B	5.3
C	10.7
E	5.4

IC 051

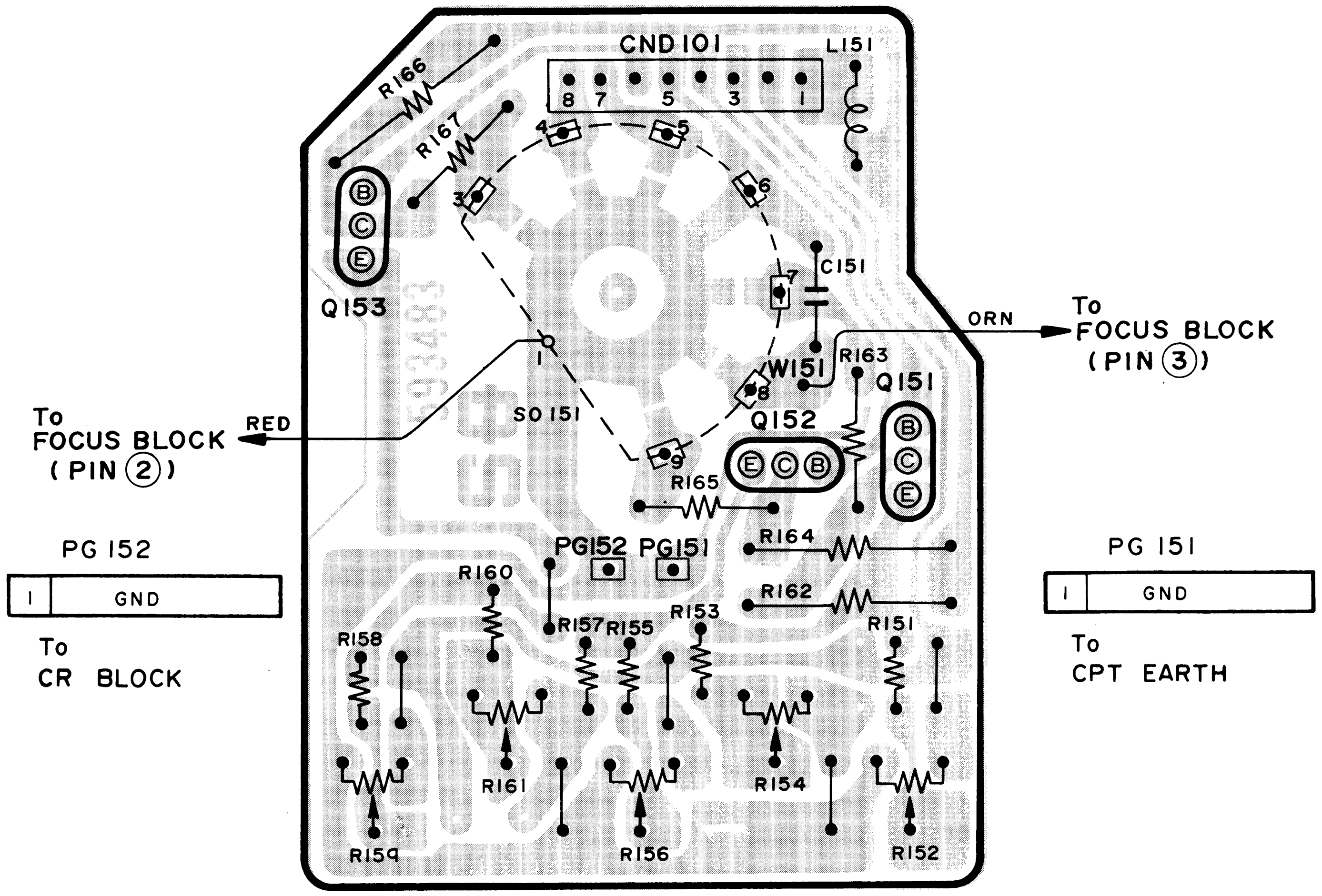
	9	10	11	12	13	14	15	16	
	0	1.1	9.8	5.2	2.7	5.4	9.8	0.8	
18	8	7	6	5	4	3	2	1	17
0	4.4	4.4	10.3	6.4	3.4	2.3	1.1	2.3	0

IC 101

1	2	3	4	5	6	7	8	9	10	11	12	13	14
10.9	0.8	8.1	8.1	2.3	1.6	6.2	5.1	8.4	1.9	1.2	8.2	5.4	0
28	27	26	25	24	23	22	21	20	19	18	17	16	15
2.2	2.2	2.2	2.7	2.7	0.4	3.0	3.0	8.5	0.5	7.3	7.3	4.1	7.0

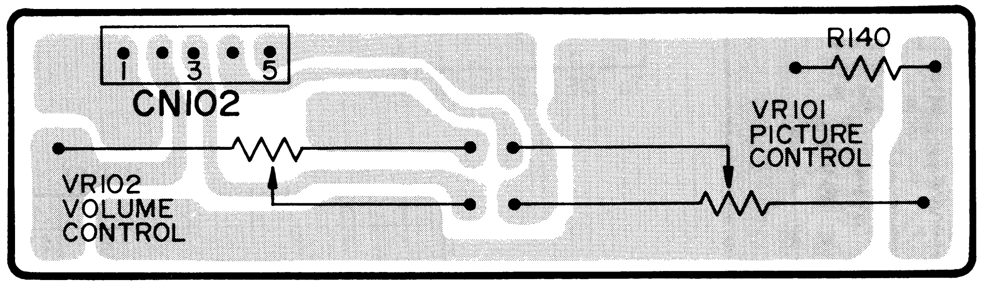

BRIGHTNESS CONTROL
VR105
S101
SW
R104
R102
COLOUR CONTROL
VR104
R101
VERT. HOLD CONTROL
VR103
MONITOR SELECTOR
HTK-5V
AUTO
MONITOR OFF
CAMERA OFF
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
To COLOUR MONITOR P.C.B

MONITOR SELECTOR P.C.B


CND101
8 7 5 3 1
L151
R166
R167
Q153
B C E
C151
SO151
W151
R163
Q151
Q152
E C B
R165
ORN
To FOCUS BLOCK (PIN ③)
RED
To FOCUS BLOCK (PIN ②)
593483
PG152 PG151
R164
R160
R162
R157 R155
R153
R151
R158
R161
R154
R159
R156
R152
PG 152
1 GND
To CR BLOCK
PG 151
1 GND
To CPT EARTH

CPT SOCKET P.C.B

R159	R161	R156	R154	R152
BLUE BKG	BLUE DRIVE	GREEN BKG	RED DRIVE	RED BKG


CN102
1 3 5
R140
VR101 PICTURE CONTROL
VR102 VOLUME CONTROL

VOLUME CONTROL P.C.B

CND101

1	80V
2	11V
3	RED
4	GREEN
5	GND
6	BLUE
7	HEATER
8	HEATER

To COLOUR MONITOR CND101

Q151

B	2.2
C	56
E	2.0

Q152

B	2.2
C	54
E	2.0

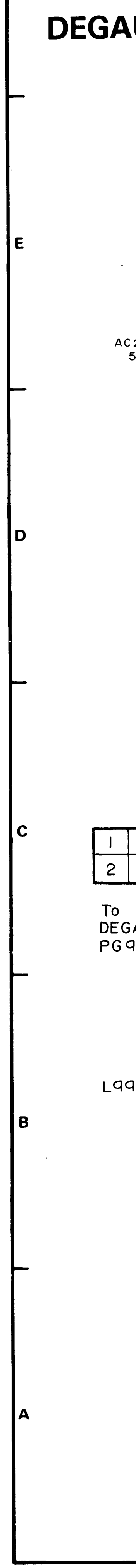
Q153

B	2.2
C	56
E	2.0

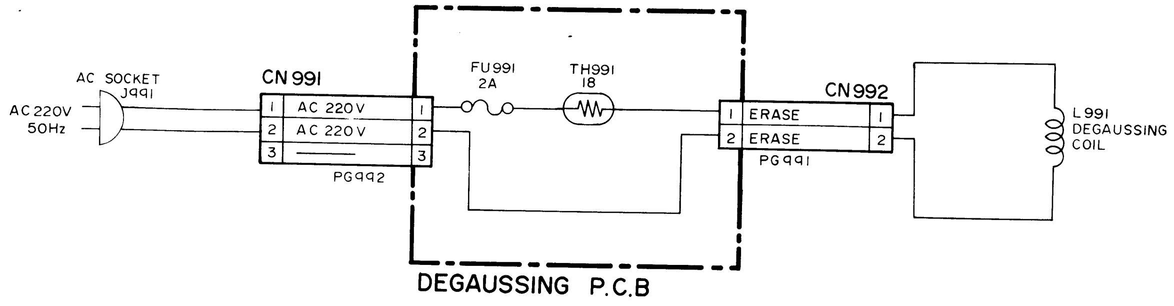
CN102

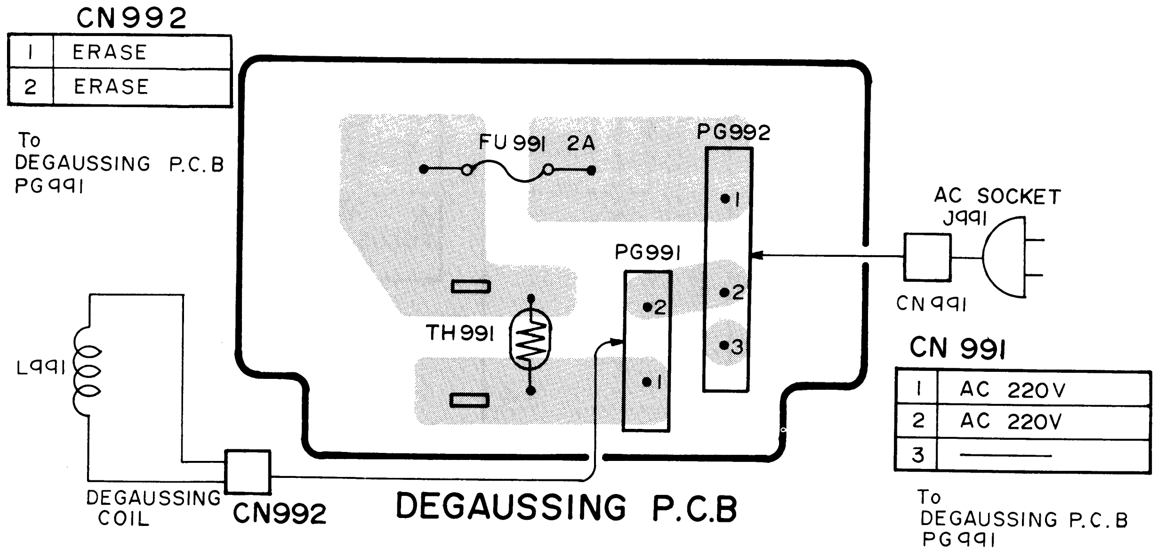
5	12V
4	CONTRAST
3	AUDIO CTL
2	AUDIO
1	GND

To AUDIO/REGULATOR PG003


DEGA
1
2
To
DEGA
PG9
L99

DEGAUSSING

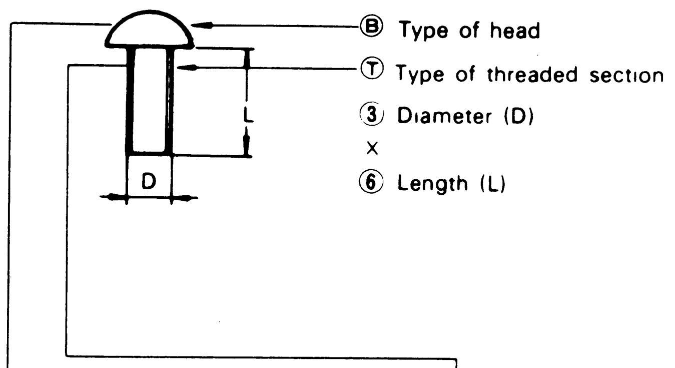

AC 220V
50Hz
AC SOCKET
J991
CN 991
1 AC 220V
2 AC 220V
3
PG992
FU991
2A
TH991
18
CN992
1 ERASE
2 ERASE
PG991
L991
DEGAUSSING
COIL
DEGAUSSING P.C.B


CN992
1 ERASE
2 ERASE
To
DEGAUSSING P.C.B
PG991
FU991 2A
PG992
PG991
TH991
AC SOCKET
J991
CN991
CN 991
1 AC 220V
2 AC 220V
3
To
DEGAUSSING P.C.B
PG991
L991
DEGAUSSING
COIL
CN992
DEGAUSSING P.C.B

EXPLODED VIEWS

SCREW CLASSIFICATION

Example: BT3 x 6


Ⓑ Type of head
Ⓣ Type of threaded section
③ Diameter (D)
x
⑥ Length (L)
L
D

Abbre-viation	Name	Shape
No symbol	Brazier head	
P	Pan head	
B	Binding head	
O	Oval countersunk head	
F	Flat countersunk head	

Abbre-viation	Name	Shape
No symbol	Machine (clamps without tapping)	
t	Tapping (clamps with tapping) Type 1	
T	Tapping (clamps with tapping) Type 2	
f	Forming tight (for metal)	

Note Since the forming tight screw tightens while self-tapping machine screws can be replaced by tapping screws

Washers and Nuts

Abbre-viation	Name	Shape
W SW LW	Washer Spring washer Locking washer	◎
E	E-ring	
N	Nut	⬡

Note Internal dia is indicated for nuts and washers

LUBRICATION

Lubrication points are shown in the exploded view diagrams by marks

Lubricants shown in the diagram are as follows

Ⓟ Pan motor oil (× 10W-40)

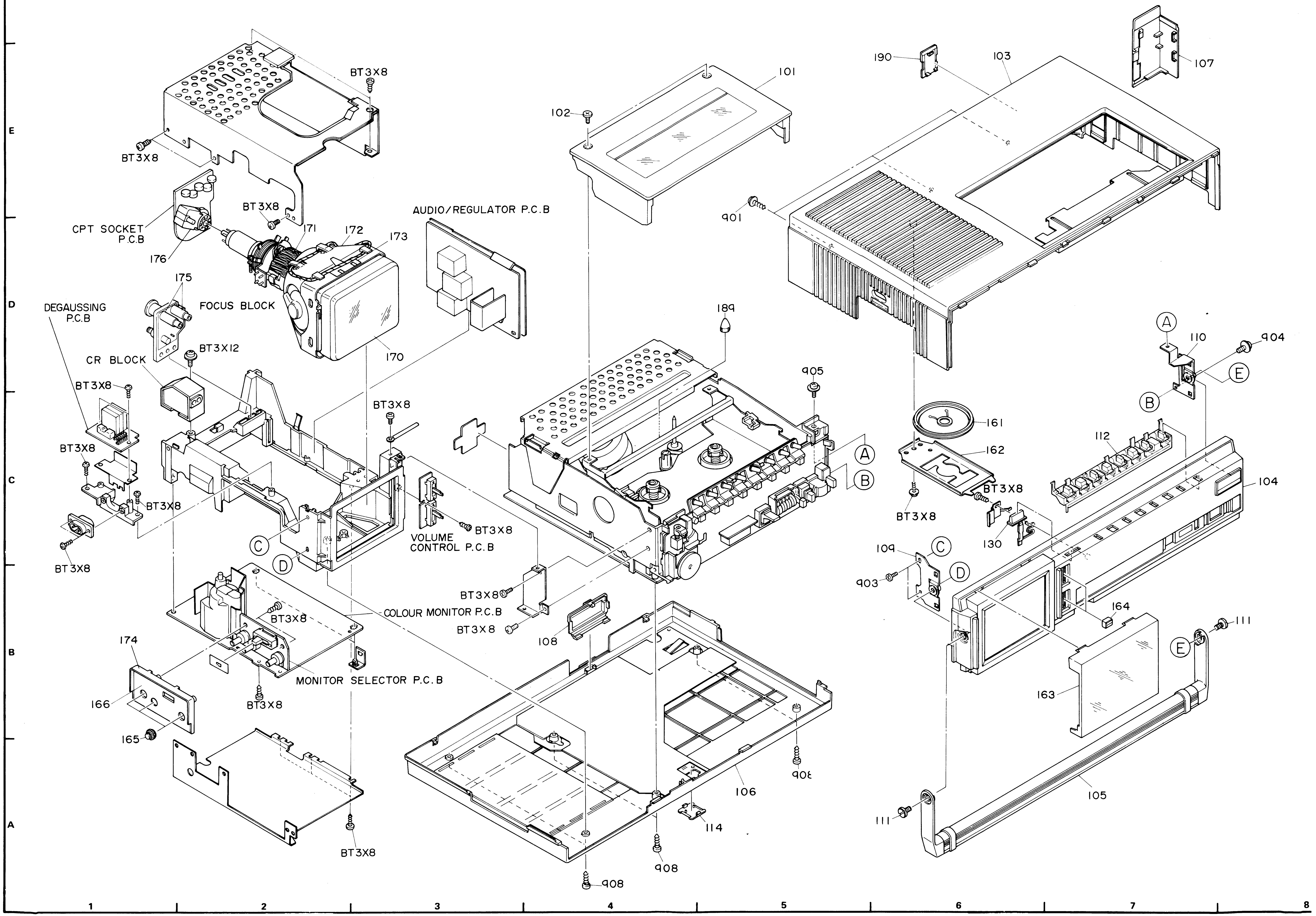
Ⓢ Sonic slider oil (# 1600)

(Si) Silicone grease (KS-64)

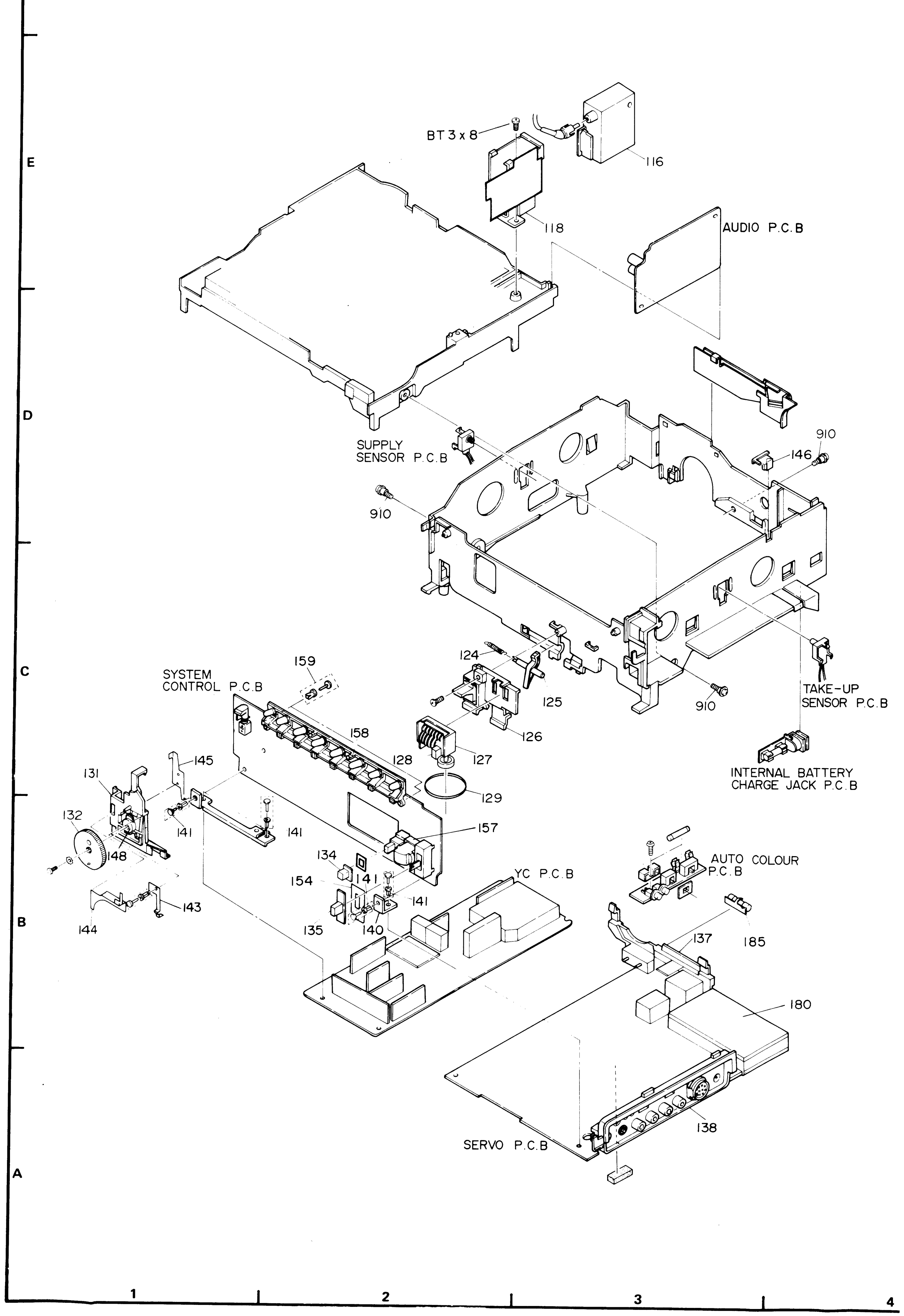
Ⓗ Hitazol (MO-138)

No symbol Froil (GB-TS-1)

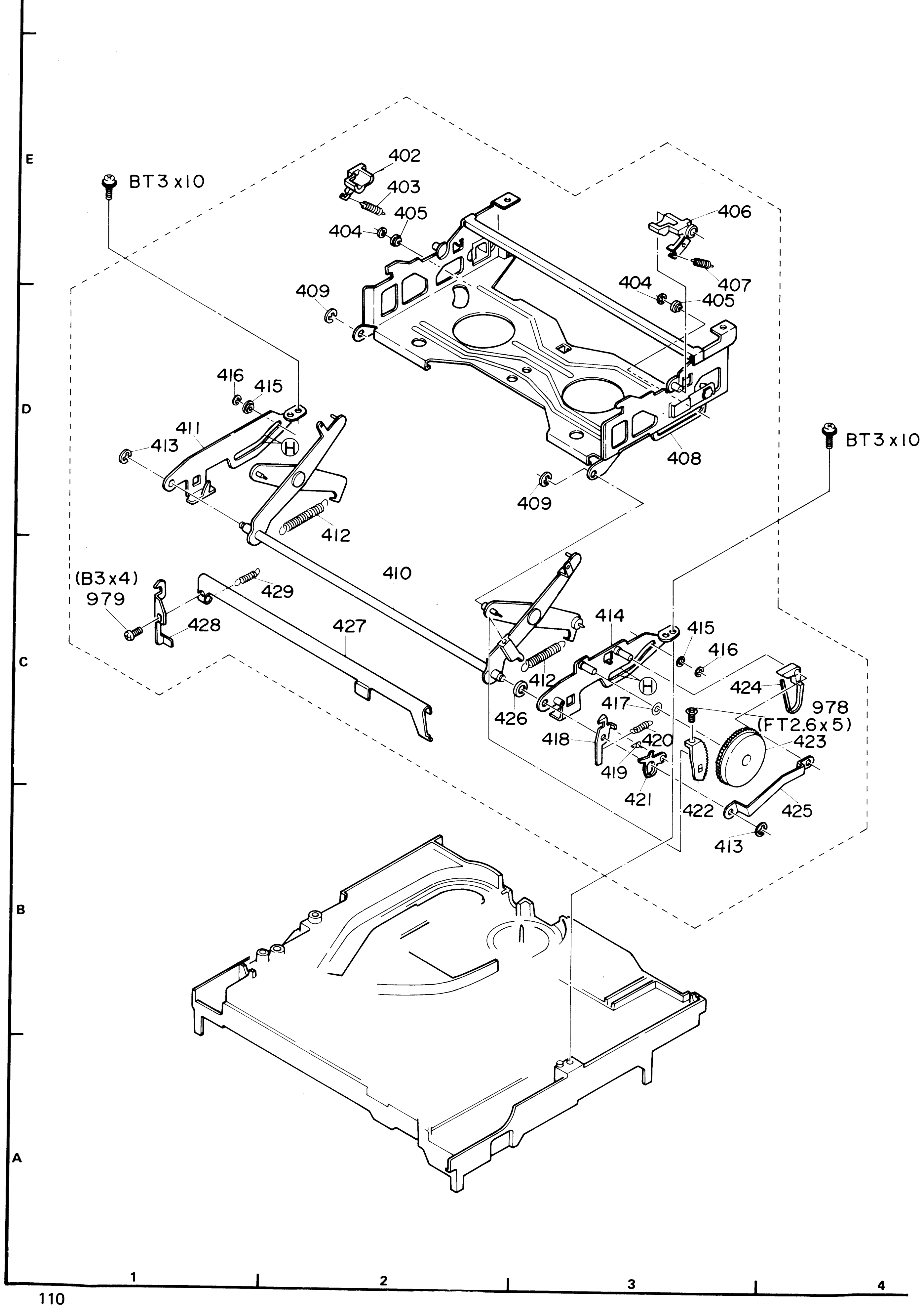
CABINET FRAME ASSEMBLY (I)


BT3X8
BT3X8
CPT SOCKET P.C.B
BT3X8
171
172
173
176
AUDIO/REGULATOR P.C.B
175
FOCUS BLOCK
DEGAUSSING P.C.B
170
BT3X12
CR BLOCK
BT3X8
BT3X8
BT3X8
BT3X8
BT3X8
VOLUME CONTROL P.C.B
BT3X8
C
D
COLOUR MONITOR P.C.B
BT3X8
MONITOR SELECTOR P.C.B
BT3X8
174
166
165
BT3X8
102
101
190
103
107
901
189
905
A
B
BT3X8
BT3X8
108
106
908
114
908
908
A
110
904
E
B
161
162
112
104
BT3X8
BT3X8
130
109
C
903
D
164
111
E
163
105
111
E
D
C
B
A
1
2
3
4
5
6
7
8

CABINET FRAME ASSEMBLY (II)


BT3x8
116
118
AUDIO P.C.B
SUPPLY SENSOR P.C.B
910
146
910
124
125
126
127
128
129
157
158
159
SYSTEM CONTROL P.C.B
131
132
145
141
148
141
134
154
141
141
135
140
143
144
YC P.C.B
AUTO COLOUR P.C.B
137
185
180
138
SERVO P.C.B
910
TAKE-UP SENSOR P.C.B
INTERNAL BATTERY CHARGE JACK P.C.B
E
D
C
B
A
1
2
3
4

CASSETTE HOLDER ASSEMBLY


BT3x10
402
403
405
404
406
407
404
405
409
416
415
411
413
408
409
BT3x10
412
410
(B3x4)
979
429
428
427
414
415
416
412
426
417
424
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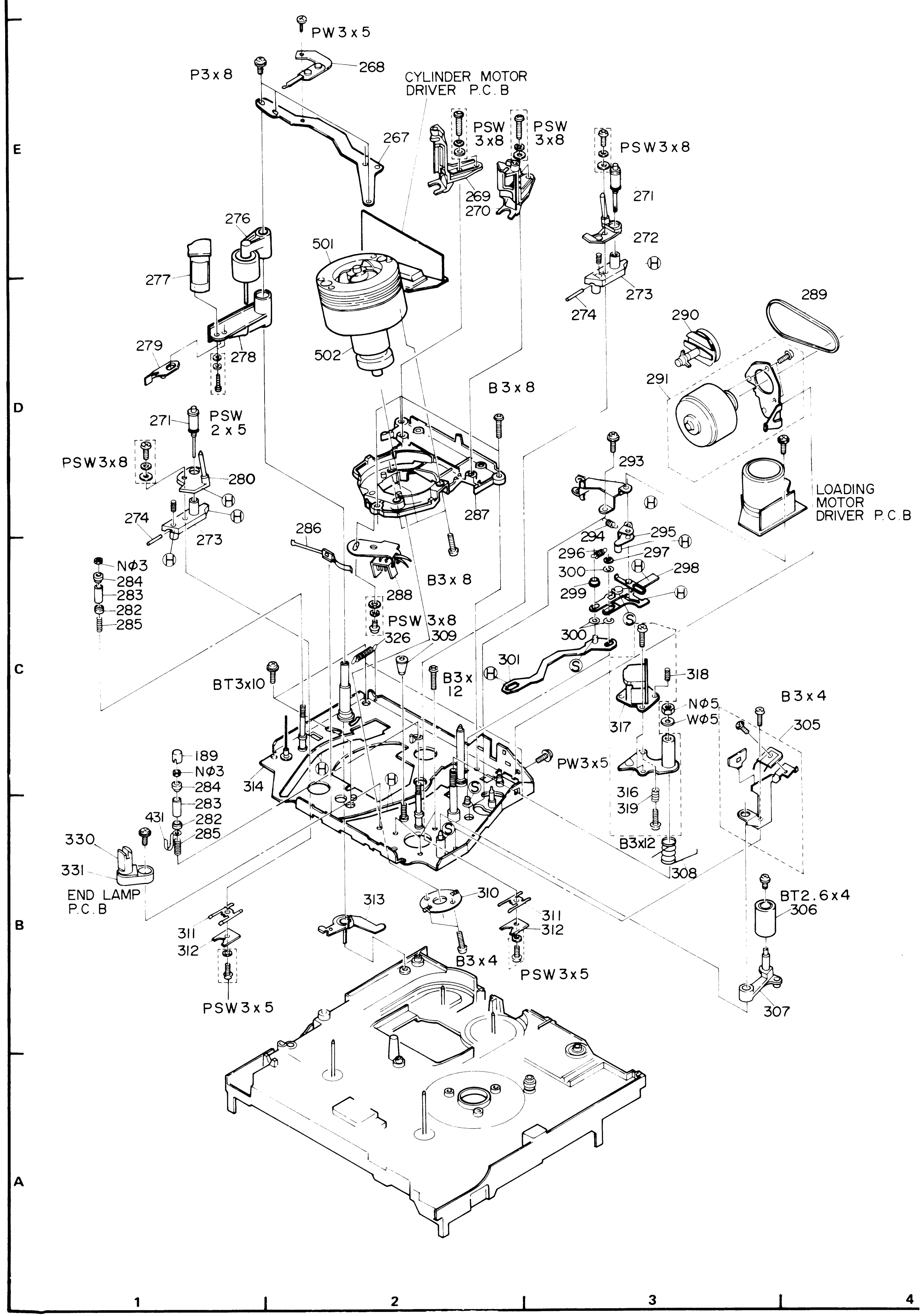
MECHANISM ASSEMBLY (I)


PW3x5
268
P3x8
CYLINDER MOTOR DRIVER P.C.B
267
PSW 3x8
PSW 3x8
PSW3x8
269
270
271
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501
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289
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291
B3x8
271
PSW 2x5
PSW3x8
280
274
273
NΦ3
284
283
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286
287
B3x8
288
PSW 3x8
326
309
293
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301
LOADING MOTOR DRIVER P.C.B
BT3x10
B3x 12
318
317
NΦ5
WΦ5
B3x4
305
PW3x5
316
319
B3x12
308
189
NΦ3
284
283
282
285
431
314
330
331
END LAMP P.C.B
313
310
311
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311
312
B3x4
PSW3x5
PSW3x5
BT2.6x4
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307
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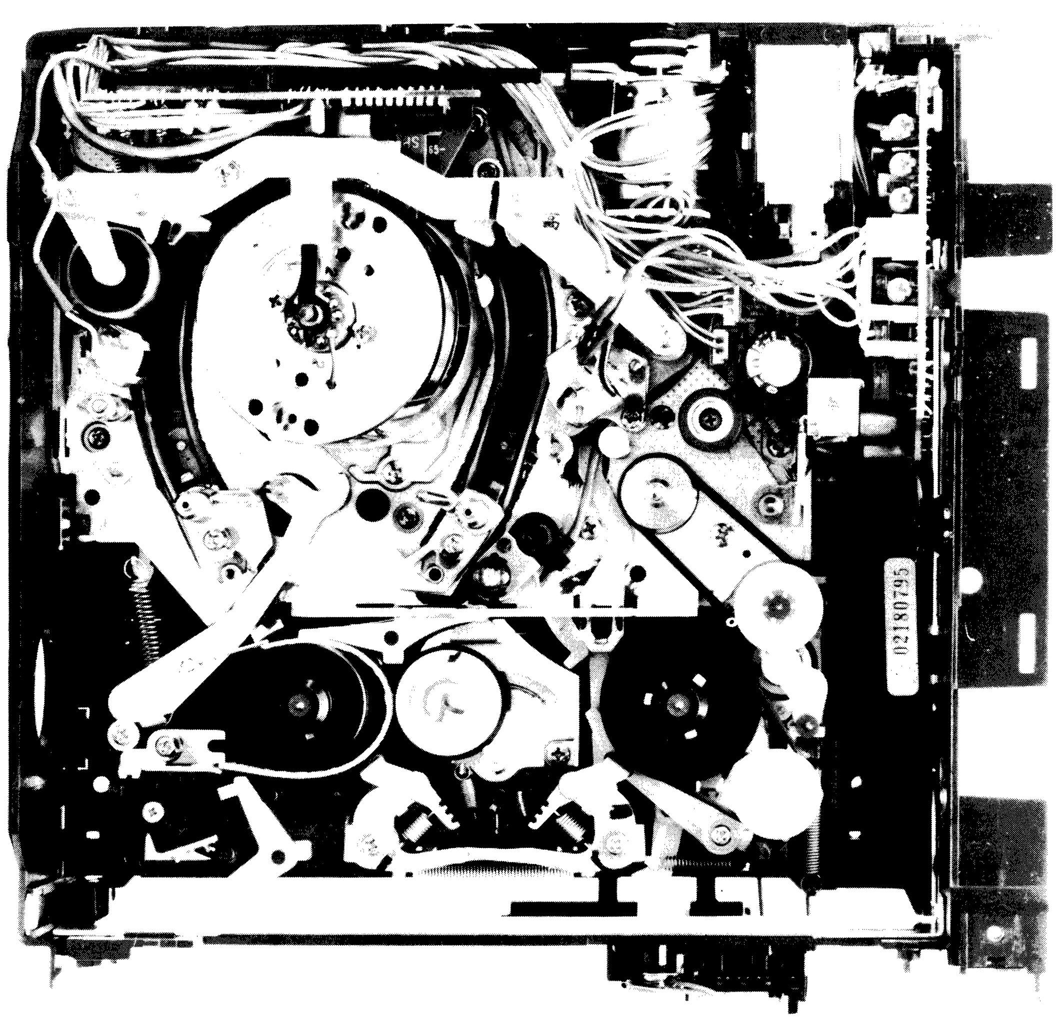
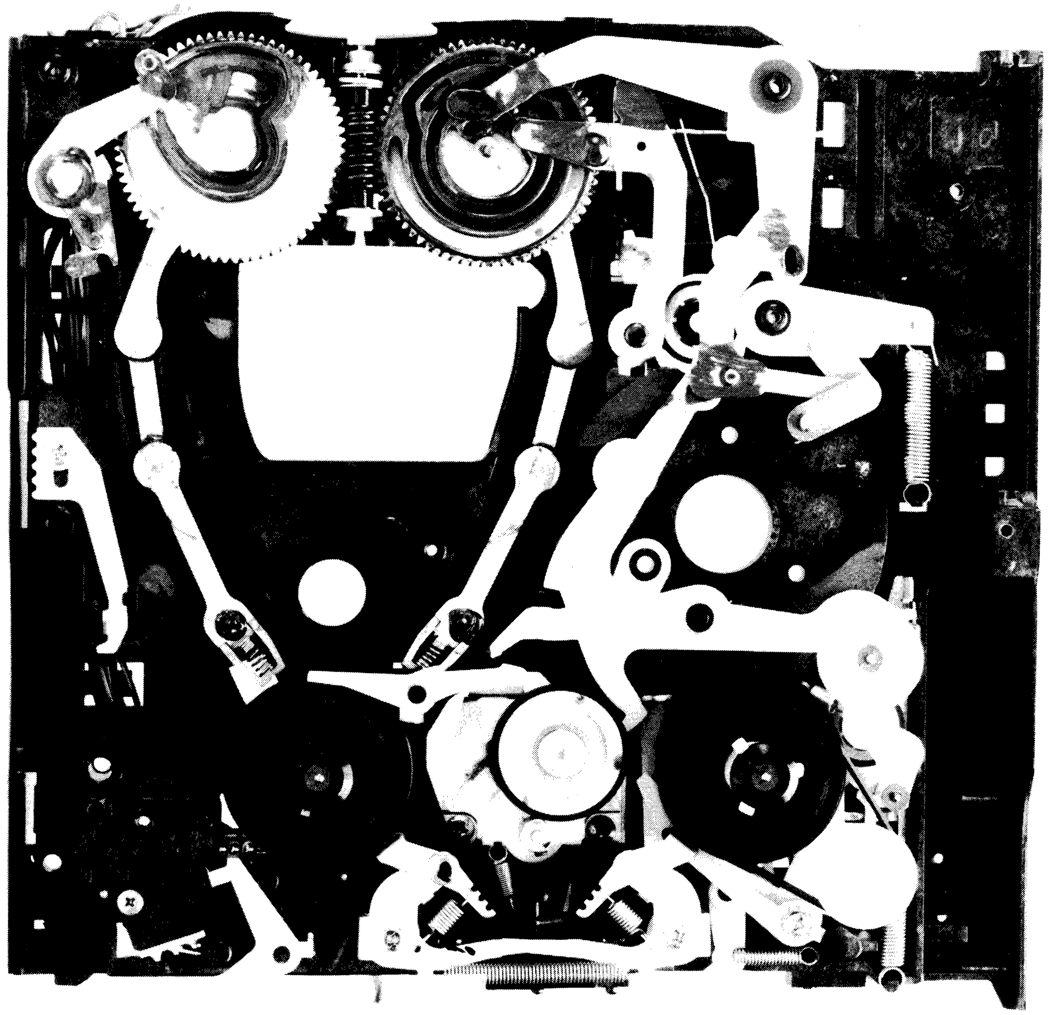
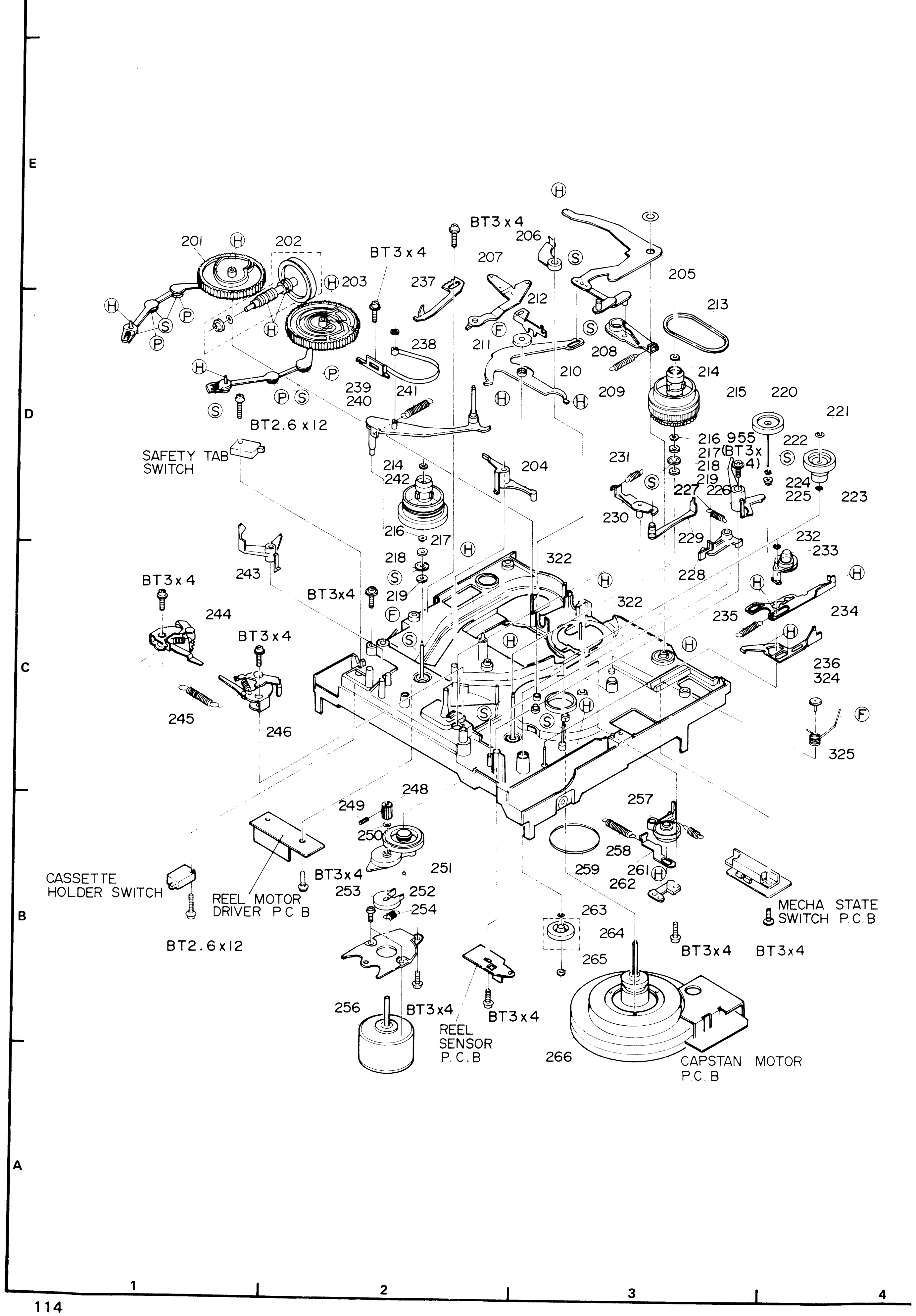
MECHANICAL PARTS LOCATION (I)



MECHANICAL PARTS LOCATION (II)



MECHANISM ASSEMBLY (II)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955
(BT3x4)
BT3 x 4
BT3x4
BT2.6 x 12
BT2.6x12
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Ⓟ
Ⓕ
SAFETY TAB SWITCH
CASSETTE HOLDER SWITCH
REEL MOTOR DRIVER P.C.B
REEL SENSOR P.C.B
CAPSTAN MOTOR P.C.B
MECHA STATE SWITCH P.C.B

REPLACEMENT PARTS LIST

ELECTRICAL PARTS

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C057	0256403	TANTALUM 2.2MF,20V
C268	5058391	TRIMMER
C505	0256383	TANTALUM ELECTROLYTIC 4.7MF 16V
C545	0256383	TANTALUM ELECTROLYTIC 4.7MF 16V
		RESISTORS
B801	5068292	RESISTOR BLOCK
RT401	5007464	SEMI VARIABLE 47KOHM
RT402	5007465	SEMI VARIABLE 100KOHM
RT403	5007464	SEMI VARIABLE 47KOHM
RT404	5007466	SEMI VARIABLE 220KOHM
RT501-502	5007533	SEMI VARIABLE RESISTOR
RT503	5007534	SEMI VARIABLE 220KOHM
RT504	5007531	SEMI VARIABLE RESISTOR
RT505	5007534	SEMI VARIABLE 220KOHM
RT507	5007535	SEMI VARIABLE RESISTOR
RT508	5007533	SEMI VARIABLE RESISTOR
RT509	5007531	SEMI VARIABLE RESISTOR
RT510	5007532	SEMI VARIABLE 10KOHM
RT511	5007434	SEMI VARIABLE 4.7KOHM
RT512	5007533	SEMI VARIABLE RESISTOR
RT801	5007433	SEMI VARIABLE 2.2KOHM
R023	5007183	SEMI VARIABLE RESISTOR 1KOHM
R029	0169023	WIRE WOUND RESISTOR 10 OHM 7W
R034	5007186	SEMI VARIABLE RESISTOR 10KOHM
R038	0170471	FUSE RESISTOR 2.2OHM+-5% 1/4W
R044	0170472	FUSE RESISTOR 3.3OHM+-5% 1/4W
R055	0170421	CARBON FILM 100 OHM+-5% 1/4W
R060	5007182	SEMI VARIABLE RESISTOR 470OHM
R063	5007186	SEMI VARIABLE RESISTOR 10KOHM
R069	0170473	FUSE RESISTOR 4.7OHM+-5%
R071	5007184	SEMI VARIABLE RESISTOR 2.2KOHM
R074	0170582	CARBON FILM RESISTOR 2.7OHM+-5%
R079	5007223	VARIABLE RESISTOR 4.7KOHM
R084	5007185	SEMI VARIABLE RESISTOR 4.7KOHM
R092	0170474	FUSE RESISTOR 10 OHM+-5% 1/4W
R105	5007183	SEMI VARIABLE RESISTOR 1KOHM
R116	5007185	SEMI VARIABLE RESISTOR 4.7KOHM
R123	5007184	SEMI VARIABLE RESISTOR 2.2KOHM
R147	5007224	SEMI VARIABLE 10KOHM
R152	5007164	SEMI VARIABLE 4.7KOHM
R154	5007161	SEMI VARIABLE 470OHM
R156	5007164	SEMI VARIABLE 4.7KOHM
R159	5007164	SEMI VARIABLE 4.7KOHM
R161	5007161	SEMI VARIABLE 470OHM
R230-231	0170472	FUSE RESISTOR 3.3OHM+-5% 1/4W
R233	5007433	SEMI VARIABLE 2.2KOHM
R235	5007432	SEMI VARIABLE 1.0KOHM
R279	5007432	SEMI VARIABLE 1.0KOHM
R280	5007318	SEMI VARIABLE 20KOHM

SYMBOL-NO	P-NO	DESCRIPTION
R420	0170481	FUSE RESISTOR 22OHM+-5% 1/4W
R685	0149705	METAL FILM RESISTOR 470 OHM
R840	0170419	CARBON FILM 22OHM+-5% 1/4W
VR101-102	5027172	VARIABLE RESISTOR 10 KOHM(A)
VR103	5005313	VARIABLE RESISTOR 5 KOHM (B)
VR105	5005311	VARIABLE RESISTOR 500OHM (B)
		SEMI-CONDUCTORS
D001-004	5330131	DIODE 1S2076
D005	5331051	DIODE 1K60P
D006-015	5330131	DIODE 1S2076
D010	5331501	DIODE 1K34A
D051-054	5330573	DIODE IS2473
D055	5330421	DIODE SILICON V09C 15K
D056	5331861	DIODE V17C
D101	5330573	DIODE IS2473
D201-202	5330131	DIODE 1S2076
D204-205	5330131	DIODE 1S2076
D206	5330131	DIODE 1S2076
D207-210	5330131	DIODE 1S2076
D211	5330131	DIODE 1S2076
D401-403	5330131	DIODE 1S2076
D404-405	5330131	DIODE 1S2076
D406	5330131	DIODE 1S2076
D501-513	5331592	DIODE 1SS133
D514	5330552	ZENNER DIODE HZ11B
D515-518	5331592	DIODE 1SS133
D521	5331592	DIODE 1SS133
D523-524	5331592	DIODE 1SS133
D525-527	5331502	DIODE 1K34ALF
D528-536	5331592	DIODE 1SS133
D539-550	5331592	DIODE 1SS133
D554-557	5331592	DIODE 1SS133
D601-609	5331511	DIODE DAN201
D611-612	5331592	DIODE 1SS133
D705	5331431	DIODE ERB81
D706-707	5330001	RECTIFIER SILICON V03C 60H
D708	5331592	DIODE 1SS133
D709	5330501	DIODE SILICON U0-5B 60HZ 3MW
D710-712	5331592	DIODE 1SS133
D713	5331511	DIODE DAN201
D714	5331592	DIODE 1SS133
D802	5331592	DIODE 1SS133
D803	5331511	DIODE DAN201
D805-806	5331592	DIODE 1SS133
D809	5331592	DIODE 1SS133
D810	5331592	DIODE 1SS133
D815-816	5331592	DIODE 1SS133
D820	5330713	DIODE HZ-3B
D821	5330312	DIODE-ZENER SILICON
D822	5330328	DIODE HZ-9C3

SYMBOL-NO	P-NO	DESCRIPTION
D823	5331774	ZENNER DIODE RD5.1JB1
D830-837	5380491	LED LN-81P
D838	5330553	DIODE HZ11C
D840	5330553	DIODE HZ11C
D851	5331592	DIODE 1SS133
D901	5330573	DIODE IS2473
D902	5330104	RECTIFIER SILICON V06A 15K
D903-904	5331511	DIODE DAN201
D912-913	5380441	LED LN55
IC001-002	5359501	IC MPD4011C
IC003	5355021	IC µPC575C2
IC051	5355321	IC HA11235
IC101	5368151	IC µPC1365C
IC201	5375601	MODULE HT4217
IC202	5375611	MODULE HT4218
IC203	5375621	MODULE HT4219
IC204	5375641	IC TA4327
IC205	5358681	IC TA4301
IC206	5375581	IC TA4326
IC401	5352631	IC BA5102
IC402	5376202	IC TA4379A
IC501	5352621	IC HA11727
IC502	5352611	IC BA847
IC503	5350251	IC HA1406
IC504-505	5359501	IC MPD4011C
IC506	5376151	IC TA4370
IC681	5352111	IC HA11714
IC682	5352121	IC HA11715
IC701	5375781	IC TA4338
IC702	5375651	IC TA4328
IC704	5376181	IC TA4369
IC741	5369271	IC MSM6207RS
IC801	5365624	IC HD44820A48
IC802	5358872	IC TA4316A
IC803	5358782	IC TA4312A
IC806	5365672	IC MB4204
IC807	5375802	IC TA4340A
IC808	5358792	IC TA4313A
IC810	5376211	IC TA4372
IC901	5358861	IC TA4310
IC902	5375981	IC TA4352
IC903	5391041	IC DM101A
Q001-003	5321662	TRANSISTOR 2SC2021S
Q004	5321662	TRANSISTOR 2SC2021S
Q005	5320595	TRANSISTOR 2SA673BC
Q006	5323191	TRANSISTOR 2SB857C/D
Q007	5320595	TRANSISTOR 2SA673BC
Q008-009	5321662	TRANSISTOR 2SC2021S
Q010	5321214	TRANSISTOR SILICON 2SD468BC 1MHZ 900MW
Q051	5320592	TRANSISTOR SILICON 2SA673B 80M
Q052-053	5323171	TRANSISTOR 2SC1214C/D
Q054	5320613	TRANSISTOR 2SC1213C

SYMBOL-NO	P-NO	DESCRIPTION
Q055	5323201	TRANSISTOR 2SC2373K/L
Q101	5321253	TRANSISTOR 2SA844
Q102	5321662	TRANSISTOR 2SC2021S
Q151-153	5323181	TRANSISTOR 2SC1890A
Q201-206	5320813	TRANSISTOR 2SC945P
Q207	5321252	2SA844D
Q210-216	5320813	TRANSISTOR 2SC945P
Q401-403	5321662	TRANSISTOR 2SC2021S
Q501	5321502	TRANSISTOR 2SK68-M
Q502-509	5321661	TRANSISTOR 2SC2021R
Q512	5321661	TRANSISTOR 2SC2021R
Q513	5322993	TRANSISTOR 2SA937QR
Q514	5322873	TRANSISTOR 2SC1652QR
Q515	5321661	TRANSISTOR 2SC2021R
Q516	5322993	TRANSISTOR 2SA937QR
Q517	5321661	TRANSISTOR 2SC2021R
Q518	5322993	TRANSISTOR 2SA937QR
Q519-520	5321661	TRANSISTOR 2SC2021R
Q521	5322993	TRANSISTOR 2SA937QR
Q522	5321661	TRANSISTOR 2SC2021R
Q524-525	5321661	TRANSISTOR 2SC2021R
Q530-531	5321661	TRANSISTOR 2SC2021R
Q704-705	5321661	TRANSISTOR 2SC2021R
Q707-708	5320593	TRANSISTOR 2SA673C
Q709	5321294	TRANSISTOR 2SC 1740S
Q710-711	5321661	TRANSISTOR 2SC2021R
Q711	5321661	TRANSISTOR 2SC2021R
Q750	5320593	TRANSISTOR 2SA673C
Q751	5321661	TRANSISTOR 2SC2021R
Q801-809	5322993	TRANSISTOR 2SA937QR
Q812-814	5323014	TRANSISTOR 2SC2603FG
Q815	5322993	TRANSISTOR 2SA937QR
Q816-817	5323014	TRANSISTOR 2SC2603FG
Q901-902	5321662	TRANSISTOR 2SC2021S
Q903	5321663	TRANSISTOR 2SC2021R/S
Q912-913	5380471	PHOTO TRANSISTOR PN150TV
Q921-922	5321662	TRANSISTOR 2SC2021S
Q923-924	5321662	TRANSISTOR 2SC2021S
TH051	5340281	THERMISTOR
VR801	5340161	VARISTOR KB265
ZD001	5331012	ZENER DIODE HZ5B
ZD002	5330318	ZENNER DIODE HZ-7B2
ZD003	5330327	DIODE HZ-9B2
ZD004	5330318	ZENNER DIODE HZ-7B2
ZD005	5330392	ZENER DIODE SILICON HZ6B 1MHZ 400MW
ZD006	5330553	DIODE HZ11C
ZD051	5330553	DIODE HZ11C

TRANSFORMERS

T051	5230101	DISCRIMINATER TRANSFORMER
T052	5270902	FLYBACK TRANSFORMER

SYMBOL-NO	P-NO	DESCRIPTION
T101	5124111	BAND PASS TRANSFOMER
T401	5260222	OSC. TRANSFORMER

COILS

SYMBOL-NO	P-NO	DESCRIPTION
L051	5128081	CHOKE COIL 0.35 MICROH
L052	5152521	CHOKE COIL 200 MICROH
L053	5152532	CHOKE COIL 3.3 MICROH
L054	5120851	COIL
L055	5152531	CHOKE COIL 10 MICROH
L101	5152081	CHOKE 3.3MICROH
L102	5150576'	CHOKE COIL 15MH
L103	5124112	BAND PASS COIL
L104	5152071	AM PADDING COIL 5.6MH
L105	5152074	CHOKE 10MICROH
L106	5124103	H.F. TRANSFOMER
L151	5152088	PEAKING COIL 120MICROH
L201	5152337	CHOKE COIL 100UH+-10%
L203	5152324	CHOKE COIL 10UH+-10%
L204	5152334	CHOKE COIL 56UH+-10%
L205	5152332	CHOKE COIL 39UH+-10%
L206-208	5152337	CHOKE COIL 100UH+-10%
L209	5152336	CHOKE COIL 82UH+-10%
L210	5152332	CHOKE COIL 39UH+-10%
L212	5152324	CHOKE COIL 10UH+-10%
L213	5152337	CHOKE COIL 100UH+-10%
L214	5152333	CHOKE COIL 47UH+-10%
L215	5152099	CHOKE COIL
L216	5152087	PEAKING COIL 100MICROH
L217-218	5152337	CHOKE COIL 100UH+-10%
L220	5152075	CHOKE COIL 12MH
L401	5150361'	CHOKE COIL
L402	5152346	CHOKE COIL 470UH+-10%
L403	5150575	CHOKE COIL 1000UH
L681	5152092	PEAKING COIL 220MICROH
L701	5152099	CHOKE COIL
L702	5152337	CHOKE COIL 100UH+-10%
L703	5152333	CHOKE COIL 47UH+-10%

CRYSTALS

SYMBOL-NO	P-NO	DESCRIPTION
X101	5780771	XTAL
X201	5780534	CRYSTAL 4.435572MHZ
X741	5780691	XTAL

MISCELLANEOUS

SYMBOL-NO	P-NO	DESCRIPTION
	5681021	TERMINAL
	5721062	FUSE 4A 250V
	5722211	FUSE HOLDER
	5722211	FUSE HOLDER
	6755481	IC HOLDER

SYMBOL-NO	P-NO	DESCRIPTION
CP201	5123833	COIL
CP202	5161952'	LOW PASS FILTER
CP203	5161954	HIGH PASS FILTER
CP204	5162113	LOW PASS FILTER
CP205	5162111	DELAY LINE
CP206	5161971	LOW PASS FILTER
CP207	5161974	BAND PASS FILTER
CP208	5161973	BAND PASS FILTER
DL101	5785281	DELAY LINE
DL102	5162311	DELAY LINE
DL201	5785191	DELAY LINE
DL202	5785122	DELAY LINE
FB001-002	5270821	FERRITE CORE
FB051	5270821	FERRITE CORE
FH710-711	5720181	FUSE HOLDER
FU001	5721061	FUSE 1.6A
FU991	5720177	FUSE 2A
F701	5721065	FUSE 3.15A
F702	5721062	FUSE 4A 250V
J710	5672151	DC JACK
MT801	5553172	METER
RL001-003	5641581'	RELAY
RL401-403	5641205	RELAY
RL701	5641402	RELAY
S0151	5659531	CPT SOCKET
S101	5624254	SLIDE SWITCH
S801	5633318	POWER SWITCH
S803	5633621	PUSH SWITCH
S804	5624272	SWITCH
S805-812	5633671	PUSH SWITCH
S914	5625061	SWITCH
S915	5633362	PUSH SWITCH
S916	5633362	PUSH SWITCH
TH001	0249794	POSITIVE THERMISTOR
TH991	0249787	THERMISTOR
VR051-052	5008951	FOCUS BLOCK

MECHANICAL PARTS

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
101	6093848	CASSETTE LID
102	7547744	SPECIAL SCREW
103	6108946	TOP CASE ASSEMBLY
104	6225566	FRONT PANEL ASSEMBLY
105	6334682	HANDLE ASSEMBLY
106	6108955	BOTTOM CASE ASSEMBLY
107	6174472	BATTERY LID
108	6861593	JACK COVER
109	7375752	HANDOL BRACKET L
110	7376592	HANDO BRACKET R
111	7782581	SPECIAL SCREW
112	6862503	BUTTON
114	6864972	REAR CAP
116	5585652	RF CONVERTER
118	6862791	HOLDER-RF CONDERTER
124	6302951	SPRING
125	6861132	EJECT ARM
126	6861951	EJECT BUTTON ASSEMBLY
127	5559491	COUNTER
128	6053731	BUTTON-COUNTER
129	6355311	BELT
130	6054083	BUTTON
131	6862486	HOLDER
132	6861573	KNOB
134	6053761	BUTTON-MEMORY
135	6861561	KNOB-SPEED
137	5672591	JACK PLATE (T)
138	5672502	JACK PLATE
140	6861971	HINGE
141	6714211	NYLON RIVET - 3MMD
143	6329894	SPRING (PLATE)
144	6536013	SPRING A
145	6534593	SPRING B
146	6862783	GUIDE PIECE
148	5008711	VARIABLE RESISTOR
154	7756871	SPACER
157	6861911	METER HOLDER
158	6862464	HOLDER-LED
159	6795231	RIVET
161	-5402611	SPEAKER
162	7376381	SP.HOLDER
163	6869722	CLEAR COVER
164	6292771	SLIDE KNOB
165	6284101	KNOB
166	6690931	M.PANEL
170	5310775	COLOR PICTURE TUBE
171	5272112	DEFLECTION YOKE
172	6870931	BT.HOLDER
173	6536061	SPRING
174	6865923	PLATE
175	6590241	BUSH
176	6870921	HOLDER(SOCKET)
180	5270771	SWITCHING REGULATOR
185	6862072	FUSE HOLDER
189	6864241	CAP
190	6864261	RF COVER
201	6861427	LOADING GEAR
202	6861396	LOADING WORM
203	6861428	LOADING GEAR
204	6861063	SUB BRAKE
205	7372541	ARM
206	6861181	SUB BRAKE ARM
207	7372511	SWITCH BRACKET
208	6861091	SPRING
209	6301396	SPRING
210	7372092	ARM
211	6861121	SPACER
212	7372002	SLIDER
213	6355301	BELT
214	7778859	POLYSLIDER WASHER
215	6414312	TAKE-UP REEL TABLE ASSEMBLY
216	7786216	POLYSLIDER WASHER
217	7787031	THRUST SUPPORT
218	6750441	RETAINER
219	7787031	THRUST SUPPORT
220	6421904	PULLEY
221	7778859	POLYSLIDER WASHER
222	6345151	PULLEY
223	7786178	POLYESTER WASHER
224	7778855	POLY SLIDER WASHER
225	0945039	BEARING-2MM
226	6861212	FF/REW ARM
227	6318926	SPRING
228	6861142	EJECT INHIBITING ARM
229	7372442	BRAKE LINK
230	6861174	BRAKE ARM
231	6300602	SPRING
232	7778859	POLYSLIDER WASHER
233	6861481	PLAY IDLER ASSEMBLY
234	7372144	SLIDER B
235	6541902	SPRING
236	7372131	SLIDER A
237	7372151	SPRING HOOK
238	7778395	E RING
239	7372522	TENSION BAND
240	7376631	TENSION ARM
241	6541752	SPRING
242	6414302	SUPPLY REEL TABLE ASSEMBLY
243	6860992	RECORDING PREVENTION ARM
244	7372421	BRAKE ARM (LEFT)
245	6301634	SPRING

SYMBOL-NO	P-NO	DESCRIPTION
246	7372431	BRAKE ARM (RIGHT)
248	6345173	FF/REW PULLEY
249	7773089	SCREW 3MMDX4MM
250	7786178	POLYESTER WASHER
251	6861471	FF/REW IDLER
252	0948492	BALL - 2MMD
253	6861301	FF/REW ARM
254	6541881	SPRING
256	5576864	MOTOR-REEL
257	6861505	FS BRAKE ASSEMBLY
258	6542031	SPRING
259	6355291	BELT
261	7372032	SLIDER
262	6862331	HOLDER
263	7778855	POLY SLIDER WASHER
264	6864144	MAGNET PULLEY
265	7778859	POLYSLIDER WASHER
266	5576836	CAPSTAN MOTOR
267	7372282	PLATE
268	5791971	BRUSH
269	6973801	S2 CATCHER 1R
270	6973811	S2 CATCHER OR
271	6344252	GUIDE ROLLER SHAFT
272	6977181	TILT POLE (TAKE-UP)
273	6977152	GUIDE ROLLER BASE
274	7544352	LOCK SHAFT
276	6861443	IMPEDANCE RAM
277	5448543	FULL ERASE HEAD
278	6861222	HEAD ARM
279	6861103	TENSION ARM OPERATION
280	6977171	TILT POLE (SUPPLY)
282	7550352	GUIDE FRAGI
283	7575242	TAPE GUIDE
284	7598461	GUIDE FLANGE
285	6304903	SPRING
286	6535622	SPRING
287	6977211	CYLINDER BASE
288	5448562	HEAD
289	6355472	BELT
290	6861433	PULLEY
291	7374771	MOTOR-LOADING
293	7371932	X-OPERATING ARM
294	6301371	SPRING
295	7373511	BRAKE LEVER
296	6319001	LOCK SPRING B
297	7778395	E RING
298	7372484	BRAKE SLIDER
299	7571111	COLLAR
300	7786216	POLYSLIDER WASHER
301	7372382	BRAKE SLIDER
305	0170285	DUE SENSER
306	6383762	PRESSURE ROLLER
307	6977142	PRESSURE ROLLER
308	6546551	SPRING
309	7549271	X-ADJUST SCREW
310	7373393	MG. PLATE
311	6329861	SPRING
312	7317942	LIMIT PLATE
313	7372471	IMPEDANCE OPERATING ARM
316	7372502	HEAD BASE
317	5448533	AUDIO CONTROL HEAD
318	7586681	SCREW
319	6304901	SPRING
322	7551012	GEAR SHAFT
324	6794371	BUSH
325	6546852	SPRING
326	6300742	SPRING
330	6757061	LED HOLDER (1)
331	6861311	LED HOLDER
402	6861011	LOCK ARM (LEFT)
403	6540663	SPRING
404	7778394	E RING 1.5MMD
405	6344381	ROLLER
406	6861001	LOCK ARM (RIGHT)
407	6540663	SPRING
408	7372323	CASSETTE UP ASSEMBLY
409	7230902	E RING
410	7372861	SHAFT
411	7371761	HOLDER BRACKET (LEFT)
412	6541491	SPRING
413	7230902	E RING
414	7372233	HOLDER BRACKET (RIGHT)
415	6344381	ROLLER
416	7778394	E RING 1.5MMD
417	7778843	WASHER
418	7371741	LOCK ARM (RIGHT)
419	6546443	SPRING
420	6324439	SPRING
421	7371732	SHAFT HOLDER
422	6431032	GEAR
423	7372204	DUMPER ASSEMBLY
424	6860932	ARM
425	7373342	DUMPER HOLDER
426	7779872	WASHER
427	7371842	SYNCHRO PLATE
428	7371722	LOCK ARM (LEFT)
429	6324439	SPRING
501	5458161	UPPER CYLINDER
502	6993021	LOWER CYLINDER
901	8661408	SCREW (PW3X8)
903	8744406	BINDING SCREW - 377D X 6MM
904	8724406	FLAT SCREW-3MMDX6MM
905	7781582	FALT SCREW-3MMDX10MM(BLACK)

SYMBOL-NO	P-NO	DESCRIPTION
908	7781137	SCREW(BT3X16B)
910	7792151	SCREW
914	7777672	PAN HEAD SCREW
978	0721305	FLAT SCREW 2.6MMD X 5MM
979	8741404	BIND SCREW-3MMDX4MM
		FOR ACCESSARIES
209	5731013	EARPHONE
210	5747321	POWER CORD
211	5898871	CONNECTOR CORDE
212	6174414	BATTERY LID
213	7091171	AC ADAPTOR